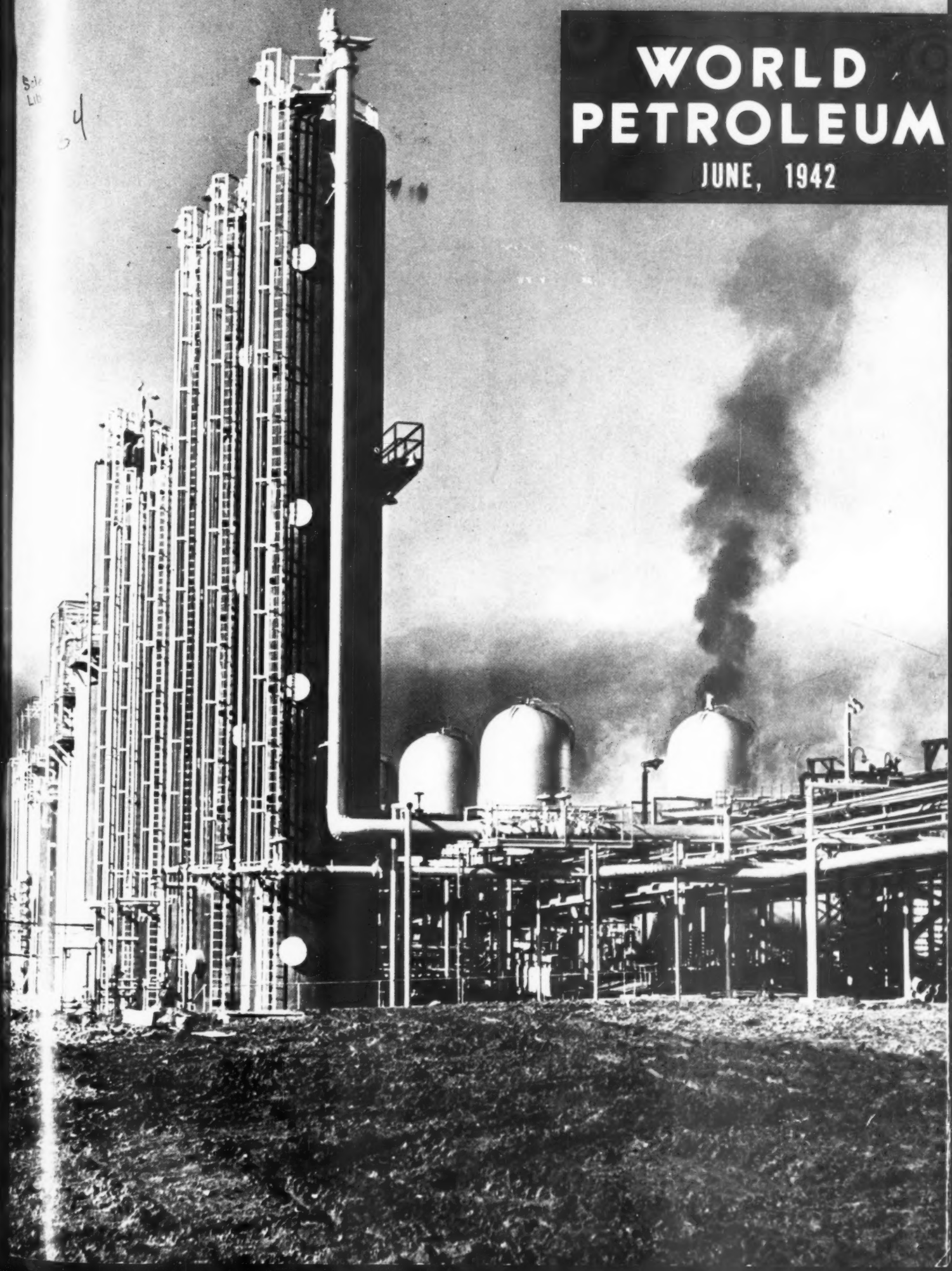
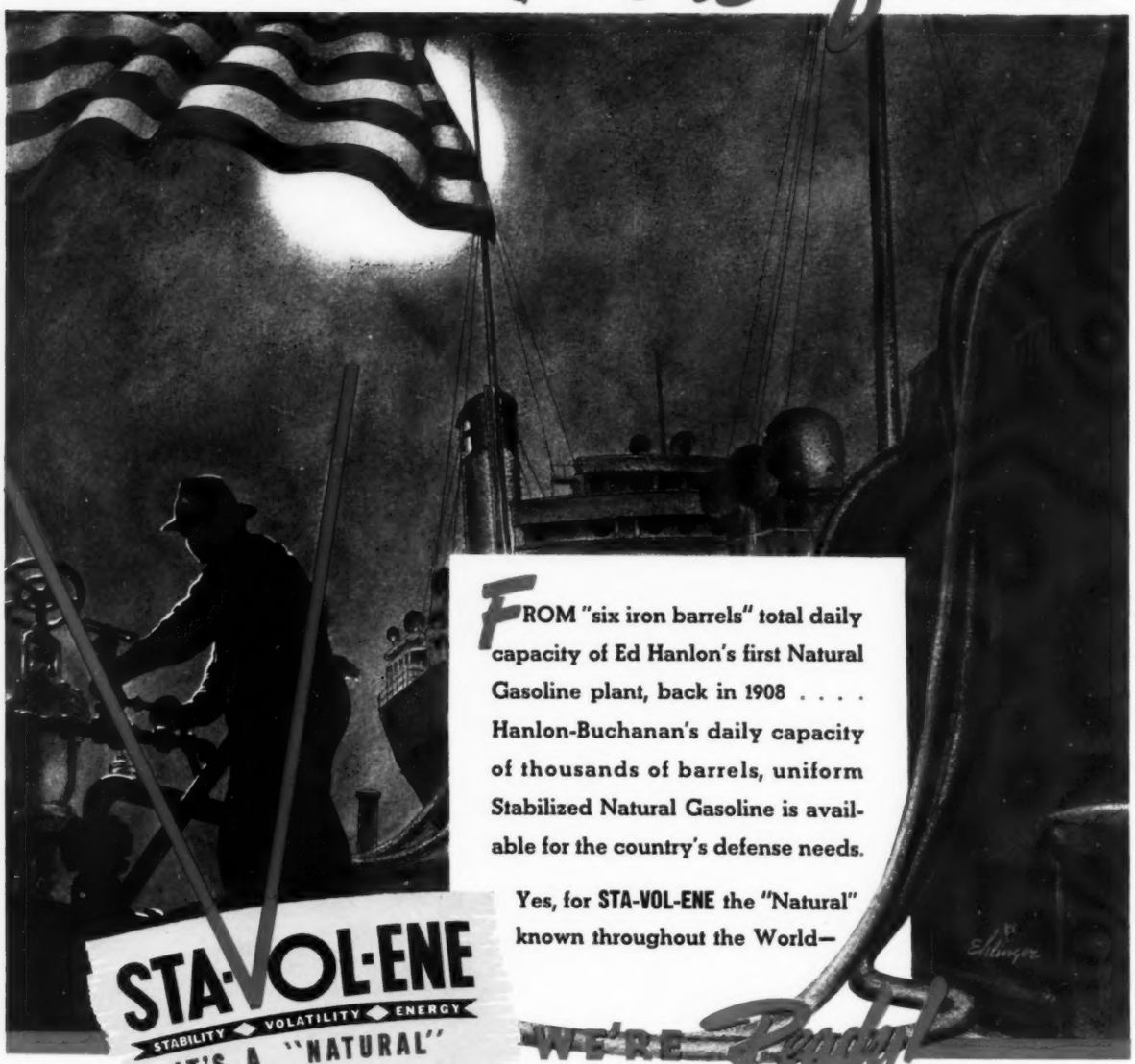
JUN 16 1942

WORLD PETROLEUM

JUNE, 1942



"NATURAL" For Defense



FROM "six iron barrels" total daily capacity of Ed Hanlon's first Natural Gasoline plant, back in 1908 . . . . Hanlon-Buchanan's daily capacity of thousands of barrels, uniform Stabilized Natural Gasoline is available for the country's defense needs.

Yes, for **STA-VOL-ENE** the "Natural" known throughout the World—

STA-VOL-ENE

STABILITY ◆ VOLATILITY ◆ ENERGY

IT'S A "NATURAL"

WE'RE *Ready!*

Hanlon-Buchanan, Inc

PIONEER NATURAL GASOLINE MANUFACTURER

EXPORT TERMINALS:
Goodhope, La. Corpus Christi, Tex.
Houston, Texas Texas City, Texas
Baytown, Texas Galena Park, Texas

TULSA, OKLAHOMA
NATIONAL BANK OF TULSA BUILDING
PHONE 4-1101 or L.D. 398 WIRE — OR WRITE P. O. BOX 1559
Cable Address . . . STAVOLENE, Tulsa, U. S. A.

FOREIGN REPRESENTATIVE:
Banks, Williams & Co., Ltd.
4 Lloyd's Ave.
London, England

WORLD PETROLEUM

Incorporating Petroleum Equipment Exporter

THE MANAGEMENT PUBLICATION OF THE INTERNATIONAL PETROLEUM INDUSTRY

VOLUME 13 | JUNE, 1942 | NUMBER 6

CONTENTS

Rationing—Help or Hindrance . . . 21

Ickes Lauds Industry's Cooperation . . 22

Nation-Wide Gasoline Rationing . . . 23

Phillips Petroleum—25 Years of Progress 24

Financial Outlook 46

Foreign Oil Legion 54

Abstracts 56

Rex W. Wadman
General Manager

E. W. Mayo
Editor

E. W. Mayo, Jr.
Managing Editor

S. J. Gallay
Advertising Manager

Heyworth Campbell
Art Director

COPYRIGHT

COPYRIGHT, 1942, by the estate of Russell Palmer. Contents may not be reproduced without permission.

CORRESPONDENCE

ADDRESS all correspondence regarding editorial, advertising and subscription matters to 2 West 45th Street, New York, N. Y. Telephone Murray Hill 2-7333.

Published monthly by the estate of Russell Palmer, 34 Crystal Street, East Stroudsburg, Pa.

London office: Brettenham House, Lancaster Place, W.C.2.

Pacific Coast office: Don F. Harner, 1595 Pacific Avenue, Long Beach, California. (Tel.: 613-238)

SUBSCRIPTIONS

Annual subscription is offered at the flat rate of $5.00 (U.S.) postpaid. Single copies are obtainable at 50 cents.

Frank Phillips, Chairman,
Phillips Petroleum Company.

EDITORIAL

NATIONWIDE RATIONING—A HELP OR A HINDRANCE?

RATIONING of gasoline along the Eastern Seaboard of the United States has been put into effect because the withdrawal of tankers on which that part of the country normally depended for over 80 percent of its supplies left a gap which alternative methods of transportation are unable immediately to fill. It was approached reluctantly by those in official positions, like Petroleum Coordinator Ickes, who realized the injurious effect it would have upon business and employment. It has been accepted in good spirit, however, by those most directly affected because they recognize it as a necessity imposed by wartime conditions and are willing to submit to personal loss and inconvenience in order that war plants may continue to operate and workers in such plants be able to reach their jobs.

Nationwide extension of rationing is another and a far more serious matter. The proposal to adopt it is viewed with something like consternation wherever the full effect of its establishment is realized. The fact that there is an abundance of supplies throughout the interior states and a plethora in certain areas adds to the gravity of the situation. Production of specific war materials involves the production at the same time of commercial gasoline and heavier products so that any drastic restriction of the latter would react unfavorably upon the former. The only alternative would be deliberate waste or destruction of a valuable product, conservation of which is dictated by the national interest. Limitation of the use of motor fuel, moreover, if applied on an extensive scale, would inevitably have a serious effect on the operation of industrial plants in many areas where the automobile is practically the only available means of transportation.

Not the conservation of gasoline but the conservation of tires is put forward as the basic reason for the adoption of all-inclusive motor fuel regulation by those who are advocating it in Washington. This phase of the matter gives point to the suggestion of Frank Phillips, chairman of the Petroleum coordinator's general advisory committee for the area which embraces the middle western states, that if such a scheme is to be adopted it should be designated as "rubber rationing" rather than gas rationing and that it be applied through the limitation of tire mileage rather than by curtailment of gasoline sales. This, he points out, would bring home to the general public the critical nature of the rubber shortage and stimulate more vigorous action to put into operation an adequate program of synthetic rubber production.

Speaking for the committee of which he is chairman and voicing what appears to be the well nigh unanimous opinion of the oil industry, Mr. Phillips adds, however, "We believe that agencies of government actually will conserve more rubber, add less disturbance to our already overburdened economy and substantially improve the morale of the people if their energies are devoted to continued encouragement of the proper use of that which we have instead of denying the use of a product in areas where that product is in oversupply", and he points out that steps are being taken to dispense with tank car transportation in the Midwest so that extension of gasoline rationing to that area would not relieve the eastern shortage.

Logical approach to the subject of rationing seems to be that of Deputy Petroleum Coordinator Ralph K. Davies who says that the provision of essential relief to the East Coast may make necessary some restriction in supplies to inland areas in which case such limitations will have to be applied. Now that war production has moved into high gear it is imperative that it not only be kept there but speeded up still further in the East, West and throughout the country. There is nothing unfair in asking for some equalization in the division of burdens imposed by the regional or national scarcity of widely used commodities and the public, as it already has demonstrated, will respond loyally to demands inspired by military needs. But a full and convincing explanation must accompany any order so disruptive in its effect as the drastic restriction of motor transportation throughout the country.

Success Of Petroleum War Effort Due To Government-Industry COOPERATION

By Harold L. Ickes

Secretary of Interior Lauds Petroleum Industry for Advanced State of War Program Resulting from Harmonious Relations Maintained Between Federal Government and Oil Companies.

ONE could hardly look back over a hectic year as Petroleum Coordinator—first for National Defense, and then for War—without acquiring a kaleidoscopic impression. So many things have happened, so rapidly, in so many places, that the reminiscences need to be sorted and cataloged before their individual outlines begin to assume sharpness.

Even without this sorting and cataloging, however, I find that there is an instantly-discernible, all-predominating motif which causes me as much gratification as anything which I have experienced over a fairly long career. That motif is the harmonious relationship which has prevailed between an industry which, according to some of its critics, is intrinsically wicked, and a Federal administration which, according to some of its same, is chronically anti-business. My satisfaction in recognizing this harmony is, I must confess, heightened by my realization that, at the beginning of our oil coordination, there was—shall we say—no thunderous applause from the industry, either for the coordination idea, itself, or for the choice of the President for Coordinator. Mr. William R. Boyd, Jr., president of the American Petroleum Institute, put it rather accurately in his testimony on February 17, before the oil subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives.

"I would not be frank with you," Mr. Boyd told the Committee, "if I did not say that the appointment of Secretary Ickes as Petroleum Coordinator, at that time, was viewed throughout the producing branch of the industry in particular with considerable alarm. You who are members of this subcommittee know better than anyone else in the Congress of the historical scraps between the industry and the Secretary of the Interior over legislative proposals which he sponsored or recommended. He called these proposals conservation measures; we in the industry called them regimentation and Federal control over oil production. We told you with all the vigor we could command that he was a would-be Oil Czar."

That was Mr. Boyd's description of the industry's attitude a year ago. Then, he went on to tell about how the Petroleum Coordinator appointed committees from the industry to consult and advise with us in our joint task of coordinating oil for defense. He told how we went to the industry for experts to man our office, in Washington and in the field. He then told the Committee: "It gives me real pleasure to testify here in commendation of the fine, patriotic, intelligent, effective work being done by the Office of Petroleum Coordinator and those directing and associated with it. The rather rare thing of staffing a government agency with men who are actually engaged in the business with which such government agency deals is novel, but effective. I want especially to note the statesmanship shown by the Coordinator and his Deputy in doing the job in full cooperation with the industry whose capital, facilities and personnel must be employed in order to get results. So far as I know, no such cooperative relationship exists today anywhere else in Government."

I am sure that I will not be misunderstood when I say that I derived considerable satisfaction from this comment by a man so highly regarded in an industry, which, once upon a time, looked upon me as a bogey man. It is convincing evidence, I believe, of a mutual confidence, at least within the field of our war activities, resulting from a close association in the patriotic endeavor.

When I held my first meeting last summer with representatives of the industry, I expressed the conviction that our vast oil resources could be enlisted most effectively in the national defense as a result of a program of voluntary cooperation—by a partnership arrangement—rather than through statutory compulsion. It was on this theory that we set up our regional industry committees on producing, refining, transportation, marketing—and, later, natural gas and natural gasoline. Our position, then, as it is today, was that it was the responsibility of the industry to solve the problems created by the war with as little assistance—and as little interference—from the Federal Government as possible. Our position then, as it is today, was that, by no act of ours should the competitive position of anyone in the industry be changed. Our position then, as it is today, was that it is for the Congress to determine national policy with respect to the form, structure, and operations of any private business enterprise.

In planning so that the half-million units of the oil industry should participate most effectively in our victory program, we knew that we must at all times be mindful of the delicate balances and interrelations that exist in this complex mechanism, and of its sensitivity to dislocations which, to the layman, might seem inconsequential. For these reasons, it was essential that there be the greatest possible freedom of action on the part of the industry; and the most effective possible mobilization of executive and technical talent to constitute both our own staff, and the membership of our committees. I believe that it can be said that we have been reasonably successful in achieving these goals. The response from the industry has been encouraging from the start.

When tankers were needed by the Government in the aid-to-Britain program last spring and summer, the industry promptly made the tankers available. This diversion of ships cut deeply into the capacity for hauling oil from the Gulf to the East Coast, thus prompting me to ask the oil companies to use tank cars to make up the deficiency. They did so, although the additional cost amounted, I am told, to more than $5,000,000 when Pearl Harbor took its imperishable place in the history of mankind. When I asked the industry to double, and then to treble, then to quadruple its production of 100-octane aviation gasoline, some companies were a trifle diffident. After all it was peace time, and what did we need with all of that 100-octane? They were more optimistic than I was about our likelihood of remaining immune from aggression. But, misgivings or not, they yielded to my representations. They enlarged existing plants. They built new ones. They revised operating schedules. They exchanged raw materials and blending agents. They pooled facilities. They made patented processes available at sharply slashed royalties. And, the net result—for which every American can be thankful—is that our production of 100-octane gasoline is far greater at this time than most people had believed was possible. The oil industry is keeping them flying.

When war came, the problems and responsibilities of both the industry and the Government were multiplied. The loss of oil fields in the South Pacific made it necessary for us to supply, not only our own military and civilian needs, but a large part of those of others of the United Nations. Up went the demand for 100-octane, for 80-octane, for aviation lubricants, for Diesel oil

and bunker oil. Those demands were prodigious, but the sneak attack by Japan found the industry and the Office of Petroleum Coordinator organized for the responsibility. We had, in late November, set up the Petroleum Industry Council for National Defense to supplement and bring together our regional industry committees. Its assignment was to handle problems which were national in scope. Through a historical coincidence, the first meeting of the Council was the day after Pearl Harbor. It was mobilization day, and the oil industry has been on a war footing ever since. Now known as the Petroleum Industry War Council, this group of seventy-two oil leaders from all parts of the nation, has coped with problem after problem with the sort of intelligence, courage and patriotism which call for the praise of the Government and the public alike. Competitive considerations have been subordinated to the general welfare. Enormous extra expense has been incurred without hesitation. Normal operations have been reshuffled. Only one question has been asked in connection with any proposal: Will it help to win the war? I shall not review the details, for all oil men know them: items concerning the moving of 700,000 bbl. of oil daily at a staggering cost; items covering shifts in refinery yields to produce more of unprofitable fuel oils and less of profitable gasoline; items relating to companies supplying their competitors at a loss. These details all add up to this simple, basic statement: the theory upon which the coordination of oil was based a year ago—that of voluntary teamwork between Government and industry — has been dramatically justified. In that respect, I might quote Mr. Boyd again, this time from a statement which he made a few weeks ago:

"Through the Petroleum Industry War Council and through the appropriate committees, the oil industry has the machinery—which no other industry has—for continuing contact and consultation with the Government. We believe it will not be disputed that both the industry and the Government have benefited, and are continuing to benefit, from this cooperative association."

Together, the oil industry and Government have a job to do—a victory to win. Together, they will do the job.

Nation-Wide Gasoline Rationing Studied By WPB

GASOLINE RATIONING and oil transportation have loomed large in public interest during the past month as millions of motorists in the Atlantic seaboard states received cards permitting them to use varying amounts of motor fuel from three gallons weekly upward. Actual handling of rationing in the Eastern states is in the hands of Price Administrator Henderson, and other government agencies are quite content to let him deal with it. The broader question which has been hotly debated is that of extending the rationing system to all parts of the country. This measure, if adopted, would not be designed to save gasoline in the interior section of the country, but to conserve rubber. Reports have persisted that the War Production Board looked upon this suggestion with a favorable eye, and that an order putting it into effect would soon be issued.

Such action, except as a last resort, has been vigorously opposed by many members of Congress, as well as by the Petroleum Industry War Council and the Office of Petroleum Coordinator on the ground that it would lead to the accumulation of unmanageable stocks of gasoline and would injuriously affect the war production program. The position generally maintained by the oil industry was defined by Frank Phillips, chairman of the Coordinator's general advisory committee for District No. 2, following a two-day conference on the subject in Chicago. Mr. Phillips said in part: "To produce essential war products a barrel of crude oil must be separated into its component parts, a substantial part of which is gasoline. Consumer rationing of gasoline will result in curtailment of refinery operations, thereby reducing production of essential war products, or will force wasteful disposal of surplus gasoline because of lack of storage facilities."

Expressing the belief that greater conservation and less disturbance to the national economy would result "from proper use of what we have" than from restricting the use of products where they exist in over-supply, Mr. Phillips added, "Evidently the sources that are suggesting nationwide rationing of gasoline base their judgment upon conservation of rubber and are ignoring its effect upon the production of essential petroleum war products and munitions, such as toluene for the armed forces and to supply essential war industries and railroads." His committee asked the Petroleum Coordinator to bring the facts and its conclusions to the attention of the War Production Board and other interested Washington agencies.

In Washington Deputy Coordinator Davies said in answer to inquiries on this subject that the extension of rationing would depend on future developments in the transportation situation.

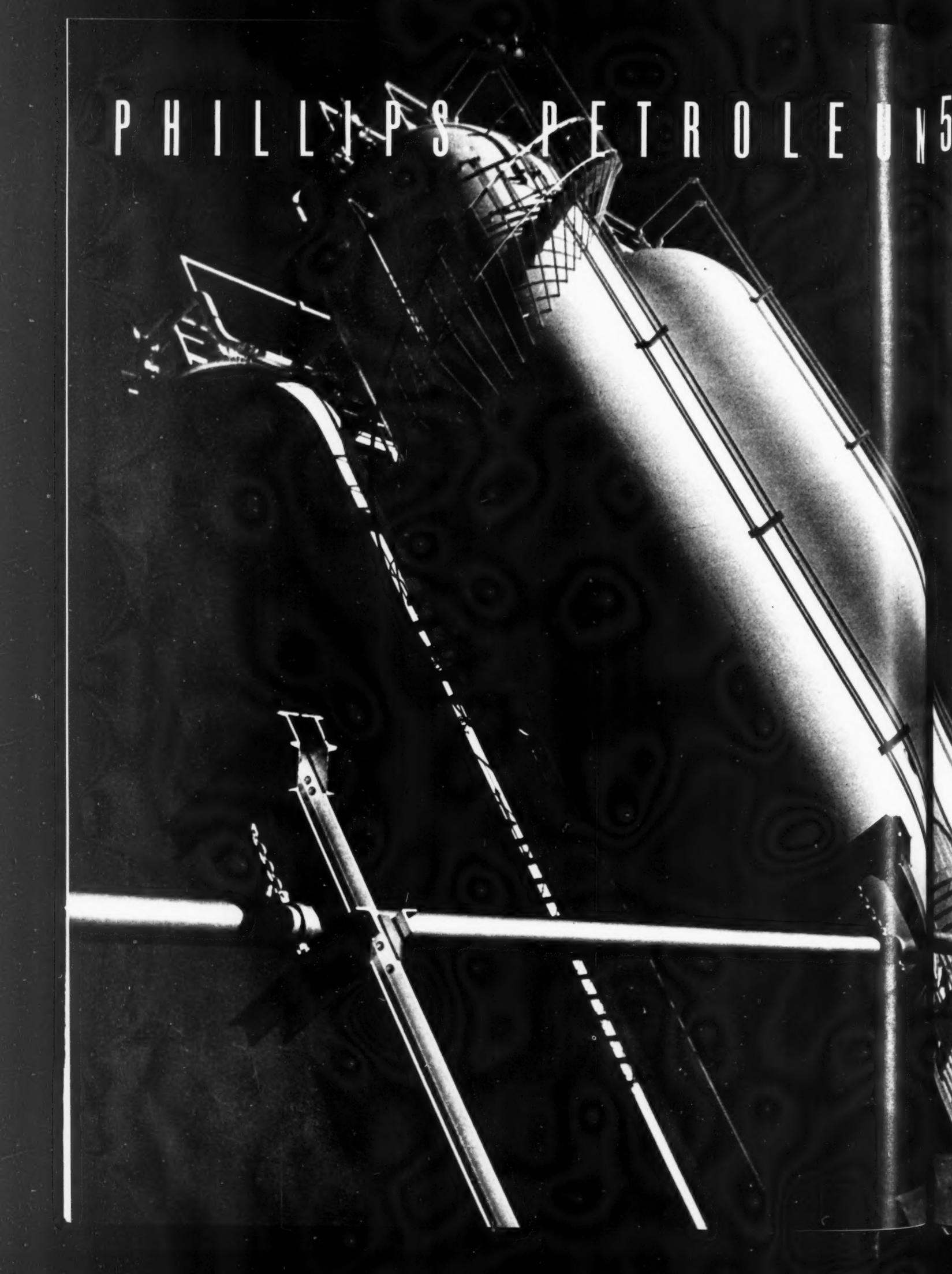
"However," said Mr. Davies, "we have called on the non-restricted areas to give up a large percentage of their transportation facilities in order that these might be used to relieve difficulties along the Eastern Seaboard. Naturally as more and more tank cars, pipe lines, barges and trucks are transferred to Eastern service it is quite possible that shortages may develop in the areas from which they are taken, but we propose to continue to call on inland areas to assist with the transportation problem to the greatest extent possible."

In the effort to substitute other means of transportation for the tanker movement on which the Eastern states have depended for over 90 percent of their petroleum supplies tank car transportation has been pushed up to 700,000 bbl. daily which, with the supplementary movement by barge and pipe line, is providing a daily supply of something over 850,000 bbl. Estimate of minimum requirements, however, even with the allowance for the ration reductions now in effect places these at 1,250,000 bbl. daily or more. The gap of 400,000 to 500,000 bbl. needed to meet this requirement is not easily closed, although numerous plans have been proposed.

Working through its established industry committees OPC is directing all movements generally eastward and northward. Cross-hauls and backhauls are being eliminated wherever possible. Rearrangement of motor truck transportation is being extended particularly in covering short hauls so as to release tank cars and make them available for the long haul service to the East Coast. Speeding up of tank car movement and deliveries and the assignment of more cars to through service is being undertaken in the effort to bring the capacity of this form of transportation up to 800,000 bbl. daily.

Based on the finding of the Tulsa conference of the Temporary Joint Pipe Line sub-committee held last March and approved at the May meeting of the Petroleum Industry War Council plans for expanding the pipe line and barge movement eastward have been outlined by Petroleum Coordinator Ickes. They include the linking up of existing pipe lines, with some relocation and new construction to fill short gaps, and the reversal of flow in the Tuscarora line across Pennsylvania to increase deliveries to the New York-Philadelphia area by 25,000 bbl. daily. Other projected steps are an extension of the Plantation line from Greensboro, N. C. to Norfolk, Va. while increasing its daily flow from 60,000 to 90,000 bbl. daily and reversal of the Keystone-Atlantic gasoline pipe line from westward to eastward movement. A combination pipe line, barge and tank car route would provide for delivery of 60,000 bbl. daily from East Texas, Louisiana and Arkansas to Helena, Ark., for shipment up the Mississippi and Ohio rivers to Pittsburgh and transfer east of that point by tank car or pipe line. Another combination route would carry 75,000 bbl. daily to Paducah, Ky., by means of a pipe line from East Texas.

These changes, designed to use existing lines wherever possible, would still involve considerable new construction and would be capable altogether of adding not more than 200,000 bbl. to eastern seaboard deliveries.


PHILLIPS PETROLEUM

25 YEARS OF PROGRESS

Unending search for improved methods and new uses for petroleum has carried a 25-year old company to a place of leadership in applied research and to an important position in the nation's war effort.

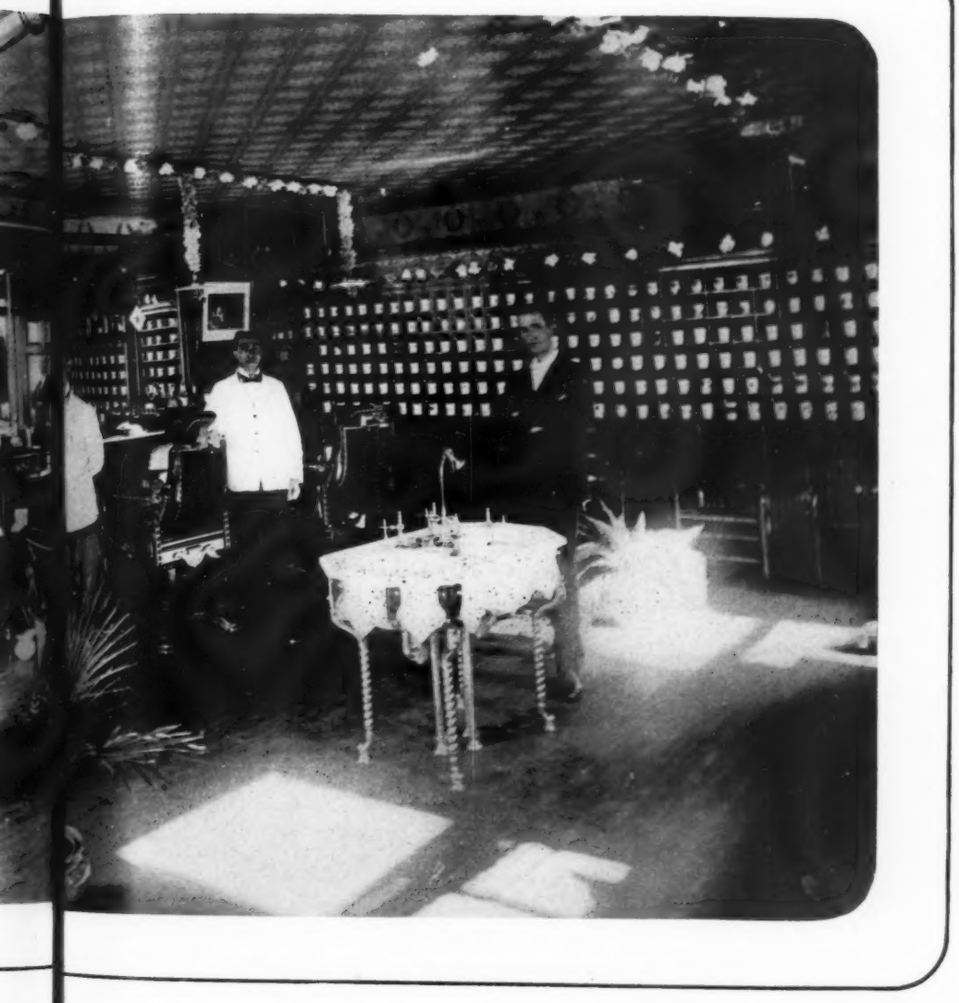
ON A June morning in 1917, two Oklahoma business men, bankers and oil operators, sat in their Bartlesville office and fingered a bunch of shiny stock certificates which signified that a new oil company had come into existence. It was an important occasion for the two men, Frank Phillips and his brother L. E. Phillips, but there is no indication that it attracted any particular attention beyond the circle of their immediate friends and associates. The country was at war, and in Oklahoma oil companies bloomed on every hand. Some of the blooms withered and fell after a brief period while others, fewer in number, grew into sturdy and prosperous enterprises as the years went on. The Phillips brothers, however, were not creating a war-baby which was to exist merely for the duration. They were hard workers, had shown sound judgment in their investments, and had brought together a group of good producing wells. There was no reason why their undertaking should not become an important local enterprise.

Right: Barber shop at Creston. Business was good as indicated by the large number of shaving mugs which line the back walls. Frank Phillips, proprietor, is at the right.

Below: K. S. Adams and Frank Phillips on April 26, 1938, when the Board of Directors unanimously approved the recommendation of Frank Phillips that he be Chairman of the Board and that K. S. Adams be President.

As later events proved, the formation of the Phillips Petroleum Company was of significance far beyond the borders of the town and state where it was organized. Within it was a germ of greatness that contributed not only to a remarkable growth in its own commercial operations, but also to the technical progress of the oil industry and the nation's strength in its present time of emergency. In the twenty-five years of its existence Phillips Petroleum Company has become an outstanding example of the small town business that has made good in every sense of that much-used term.

There is nothing spectacular about the Phillips



Company except the results it has achieved. Its beginnings were small and it never has lost the "homey" quality that attaches to a business headquartered in a small community. Although today it is a fully integrated company handling oil from the well to the gasoline tank of the consumer's automobile, it had been in business several years before it owned a full-fledged refinery, and was ten years old before it entered the field of retail marketing.

To find the explanation of the present strong position of Phillips Petroleum Company it is necessary to go a long way back, much further than the date in 1917 when its crisp new corporate shares were issued. The story really begins in a simple Nebraska farmhouse where, on a November night in 1873, following a visit of the family doctor, Lewis Phillips pridefully recorded in the family Bible the birth of his first son, Frank.

The sojourn of the Phillips family in Nebraska was brief. Lewis Phillips was a man of enterprise and public spirit as was evidenced by the fact that his neighbors elected him County Judge after he had resided among them little more than a year. But judicial honors paled before the onslaught of grasshoppers that swarmed over the prairies in 1874. As Lewis Phillips related it in later years, after the grasshoppers had devoured the grass and grain down to the very roots and started chewing the spokes of the wagon wheels he felt that it was time to leave while he still had the means of travel. Accordingly he moved over into western Iowa and settled on a farm near Creston.

The next dozen years in the life of Frank Phillips were very much like those of the average boy on a mid-western farm in that period. As soon as he was old enough he tramped the snowy roads to a single-room country school in wintertime. In spring, when the corn needed hoeing and other farm tasks had to be done, school books were laid aside. As Frank Phillips himself describes this educational experience, the intervals of farm activity were long enough to enable him to forget what he had learned at one school session before the next one began.

By the time he entered his 'teens Frank Phillips had developed an ambition. He wanted to get a job. Of course there was work to be done on the farm but that kind of work brought a boy nothing but his keep. The sort of employment he yearned for was something that would bring in real money at the end of the week and enable him to wear store clothes every day. The nearest place to find such a position was Creston and there the youngster, at the age of 14, took his way. For advice as to where to find work he went to the man he knew best, the town barber. "You're a steady young fellow," said the barber, "I'll give you a job myself."

In the 1880's and early '90's, the barber shop in the smaller American towns was an institution. It was not merely a place of business but the social center for the male population. There local gossip circulated and the doings of Congress and the world at large were discussed and analyzed. The straight edge razor still held sway, and every citizen who had attained a place of consequence in the community heralded that fact by having his individual shaving-mug with gold lettered name or initials in the long cabinet that filled one side of the shop. No man of parts would have resorted to the use of a "safety" razor had such a mechanical contraption been available. The trip to the barber's was a part, a very enjoyable part, of his routine.

Stretched at their ease in the adjustable chairs the solid citizens, as well as those less solid, were in a mood to expound their views, and the shop became at once a news exchange and a popular university. The barber who kept his mouth shut and his ears open had abundant opportunity to study human nature and to form accurate estimates of his fellow townsmen. Creston was a town of some three or four thousand but it was a county seat and had more than the average number of officials and lawyers. Consequently, the discussion among the waiting customers was of correspondingly broader scope.

Among the older generation of Creston residents

Top: Frank Phillips and Col. Arthur C. Goebel at the Bartlesville airport with Airplane Woolaroc I in which Goebel won the Dole flight to Honolulu in 1927.

Center: Early day oil men, L. E. Phillips (seated) and Frank Phillips look over one of their leases. Phil Phillips, son of L. E., holds the string that snapped the shutter.

Bottom: Basketball-minded since 1920, when K. S. Adams organized the first employee team, Phillips Petroleum Company sponsored the Championship A.A.U. squad in 1940. Above is shown the 1942 team, runners-up in the National A.A.U. Tournament.

Frank Phillips is remembered as a friendly, energetic, and "likely" young man. Details of his progress are few, but it is of record that at the age of twenty-four he was proprietor of the principal barber shop in the town and that the shop, equipped with all the latest improvements, compared favorably with any other in the state. Cigars and chewing tobacco had been installed as a side line to increase the volume of business.

The year 1897 was an important one in the life of the young business man for in that year he married Jane Gibson, daughter of a local banker, and, at the suggestion of his father-in-law, disposed of his barber shop and undertook the sale of bonds. John Gibson was a man whose activities ranged far beyond the relatively small town in which he lived. He was responsible for the construction of many important buildings which were financed by the sale of bonds, sometimes to local banks but more often to individual investors. He felt that his new son-in-law had the qualities needed for a successful salesman and in this he was not mistaken. The obvious sincerity, the honesty and enthusiasm of the young man were such as to win the confidence of those with whom he came in contact.

For the next several years Frank Phillips visited many parts of the country and rang countless doorbells in the work of placing securities. Much of his work was done in New England which was then the country's main reservoir of capital and where the thrifty residents were favorably disposed toward investments yielding a better return than they could get from the local savings bank.

However, bond selling was not Frank Phillips' destiny. At the turn of the century a great oil boom developed in the Southwest, set off by the fame of the Lucas gusher in the Spindletop field near Beaumont, Texas, in 1901. This and other wells of tremendous production excited the public imagination and brought oil men, speculators, and plain gamblers from all parts of the world into Texas and Oklahoma. It also directed the attention of business men to the possibilities of a great new industry in that part of the country.

Presumably it was the latter consideration that appealed to the young bond salesman, for he was among the passengers who, on a day in 1903, stepped off a train in Bartlesville, which is now in the state of Oklahoma, then Indian Territory. Here had been drilled the first commercial oil well within the present limits of that state and the development of the field was expanding rapidly.

Frank Phillips' own non-committal statement was that he was "just looking around." In whatever direction he looked, however, he saw oil derricks, wagons loaded with oil well machinery toiling along the rutted trails that passed for roads, and sweating workmen putting together rough shacks to house the steady influx of newcomers. Oil was in the air, but more than that it was

pouring in streams of liquid wealth from the wells that almost encircled the busy little town.

Evidently the prospect appealed to young Phillips, for within a few months he had acquired some leases on his own account. Soon thereafter he formed the Anchor Oil Company. The name is interesting for it was taken from that of a boy's club to which Frank Phillips had belonged back in Iowa—one of those youthful groups, equipped with secret password and ritual, that flourished wherever a group of youngsters in their 'teens got together. Perhaps some of his Creston cronies were investors in this first modest company. Certain it is that from the time he located in Bartlesville, Frank Phillips was an oil man, and in the years that followed he learned that business from the ground up.

Like other small operators he bought leases, drilled wells, and sold them. In the next dozen years he drilled probably 200 wells, sometimes operating on his individual account and at other times through small companies which he organized.

One of the first things he learned about the oil business was that it needed capital or, lacking that, credit. Banks in Bartlesville were a bit suspicious of the strange new industry that had sprung up around them and that seemed to involve the taking of many and long chances. They preferred the more conservative lines of land and cattle which had formed the main business of the territory and with which they were familiar. Early in his oil experience Frank Phillips decided that there was an inviting field for a bank that would cater more particularly to the needs of oil men. Accordingly he organized The Citizen's Bank and Trust Company with himself as President, and opened for business in an unimpressive two-story building near the middle of town.

Both the banking and the oil business flourished, and in 1910 Frank Phillips sent for his brother, L. E. Phillips, to come to Bartlesville and help run the bank so that he could devote more time to his oil activities.

Frank Phillips took the oil business seriously. He studied it and observed that the new horseless carriages which were coming into use in greater numbers every year were creating a constantly growing demand for oil products.

Then came the World War, adding new impetus to the automobile industry. Sales of cars were doubling from year to year, and the oil industry was feverishly expanding its facilities to provide the products needed. The use of oil as fuel and lubricant in motor cars, trucks, and tanks, under ships' boilers, and for driving locomotives and stationary engines resulted in a record volume of sales, and consequently higher prices. No better moment could have been selected to expand a modest oil business.

In the midst of this war activity Phillips Petroleum Company was incorporated on June 13,

Five Phillips brothers, all oil men. (Reading from left to right), Fred, Waite, Ed, L. E., and Frank, in a photograph taken at an Old Timers' picnic and barbecue at Frank Phillips' Ranch in Bartlesville.

1917. In the following month 75,000 shares of no par common stock were issued to acquire the personal holdings of Frank and L. E. Phillips. These properties, comprising some 79 wells producing 384 barrels per day, formed the original basis on which the company was founded. The capitalization consisted of $860,000 of preferred and 90,000 shares of common stock.

A fortunate circumstance for the young company and a hopeful sign for its future occurred within two months after its organization when, a short distance southwest of Bartlesville, it drilled a well which flowed 1,300 barrels a day. By the end of 1917, the total net assets of the company were $3,131,000, and it was fairly started on its road of rapid expansion.

In those early years the growth of the company can best be measured by its financial record. From a company with a valuation of $3,000,000 at the end of 1917, its assets were increased to almost $34,000,000 within three years. The capital structure at the end of 1920 consisted of 660,000 shares of no par common stock. The small issue of preferred had been converted to common during 1919. In 1920 the common stock was listed on the New York Stock Exchange.

Five years later, net assets had grown to $96,000,000. During this period common stockholders invested an additional $45,000,000 and $16,000,000 had been borrowed and repaid. At the end of 1925 the number of common shares had risen to 2,407,082 and loans of approximately $400,000 were outstanding in the form of long-term purchase obligations.

Between 1925 and 1930, assets increased to $145,000,000. The number of shares increased only 136,000, but $35,000,000 in notes and bonds was outstanding. For the five years ending with 1930 the company's average earnings had been about $22,000,000 yearly.

During the depression years the company's growth was slowed, but not halted. At the end of 1941 its net assets were $246,000,000, and earned surplus was $49,000,000. The number of issued shares was 4,449,052. Net income for the year was over $17,000,000 and the company's credit position was so strong that it was able to borrow funds on terms almost as favorable as those extended to government loans.

In size of assets, the company ranks among the ten largest oil companies in the United States, a remarkable record for the small $3,000,000 company that was organized twenty-five years ago.

The rapid growth in assets during Phillip's early history was the result of rapid expansion in its two major lines of activity: the production of crude oil and natural gasoline. During the first year of its operations the company had 142 producing oil wells with a daily average net production of 663 barrels. Within three years the num-

Rapid growth of the company soon filled all available space in the First National Bank Building (on the right), and in 1925 work was started on a new seven story office building. This hardly had been completed when it was necessary to add two additional floors, two 8 story wings and the tower.

ber of producing wells was increased to 849 and daily average net production was 5,131 barrels. In other words, in 1920 it took only one and one-half months to produce the equivalent of the total production in 1917. By 1925 there was a five-fold increase in production from the 1920 rate, even though the number of producing wells was not quite doubled, an indication of the more prolific production from wells then being operated.

Production continued to rise and hit a pre-proration peak in 1927 of 47,227 barrels a day, net. This peak was not exceeded until 1933 when the great Oklahoma City field raised the company's total net production to 53,228 barrels daily. Since then, net production has been increased to a level of more than 66,000 barrels daily, or 100 times the daily production rate in the company's first year of operation. At the same time its operations have grown from the small localized area in northeastern Oklahoma to include major producing activities throughout the state and in the states of Kansas, Texas, Arkansas, Louisiana, New Mexico, Nebraska, Illinois, Mississippi and Kentucky.

From its inception the company recognized that in addition to the production of crude oil there were advantageous possibilities in the vapors contained in natural gas. These vapors were then being partly saved, but through inefficient methods, to yield a product known as natural gasoline. Under war conditions there was an active demand for all types of motor fuel and there was a wide use of natural gasoline for blending with ordinary gasoline. In October, 1917, the company built its first natural gasoline plant located a few miles north of Bartlesville.

As in all other plants built up to that time the method for recovering gasoline was by compression. The plant was able to produce 350 gallons of gasoline daily but the percentage of recovery was low. Two years later a second plant was built in the nearby Osage Hills where the company had acquired many leases. At this plant some experiments were tried to increase the rate of recovery. As a result the third plant, built in 1920 and known as the Pershing plant, was operated on an entirely different system known as oil absorption. One of the simple but effective improvements introduced in the course of operation at this plant was to place the absorbers on end. By increasing the area of contact between the oil and gasoline, recovery was greatly improved. The company thus pioneered in the extraction of natural gasoline from gas vapors and soon placed in operation the systems and practical apparatus now most generally used.

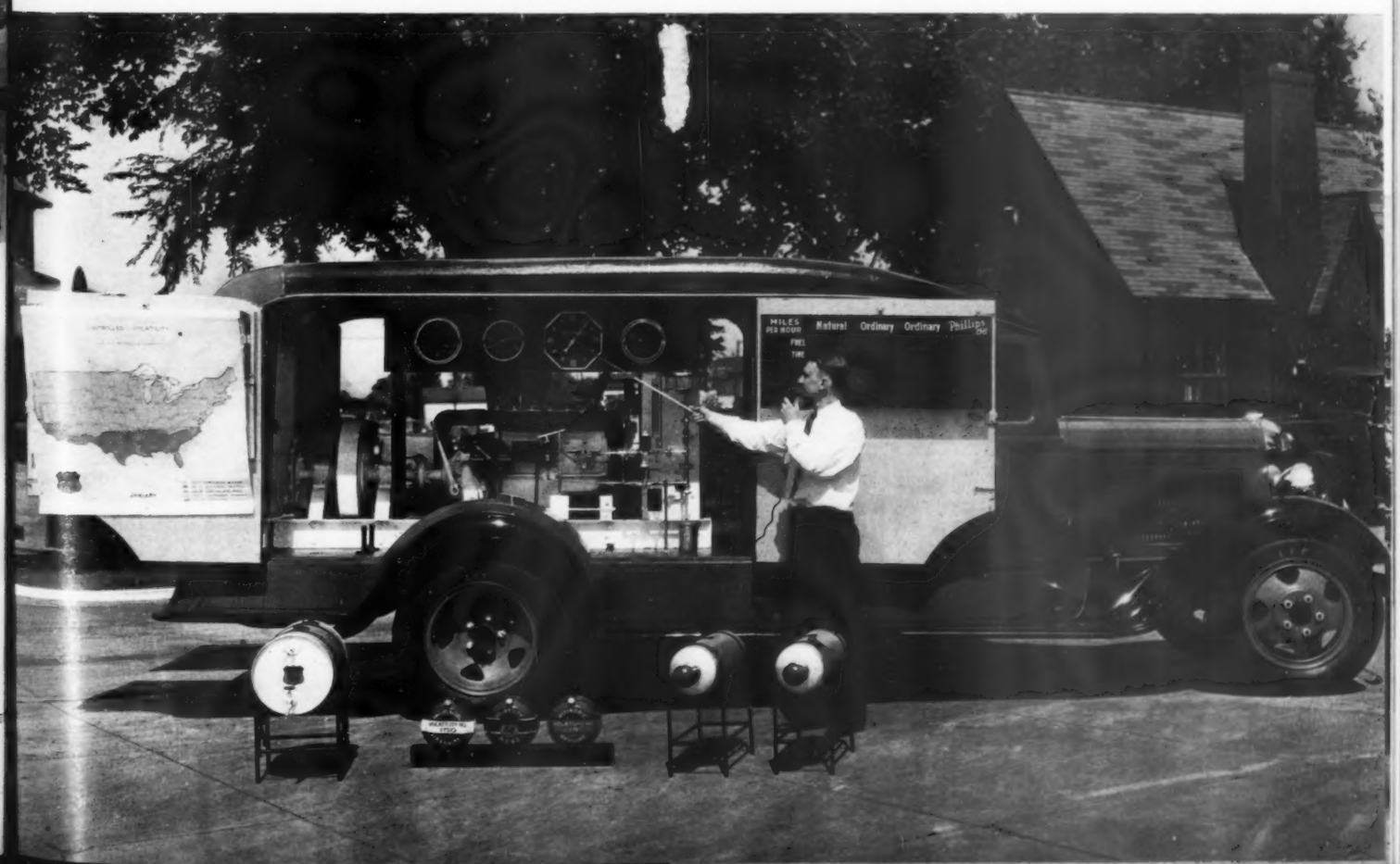
During the '20's and early '30's the company's natural gasoline business expanded rapidly. Up to 1922, seven plants had been built. In the following year five more were added; then fourteen in 1924; eighteen in 1925, and eleven in 1926. The company became a leader in the production of natural gasoline, a position that it holds to this day.

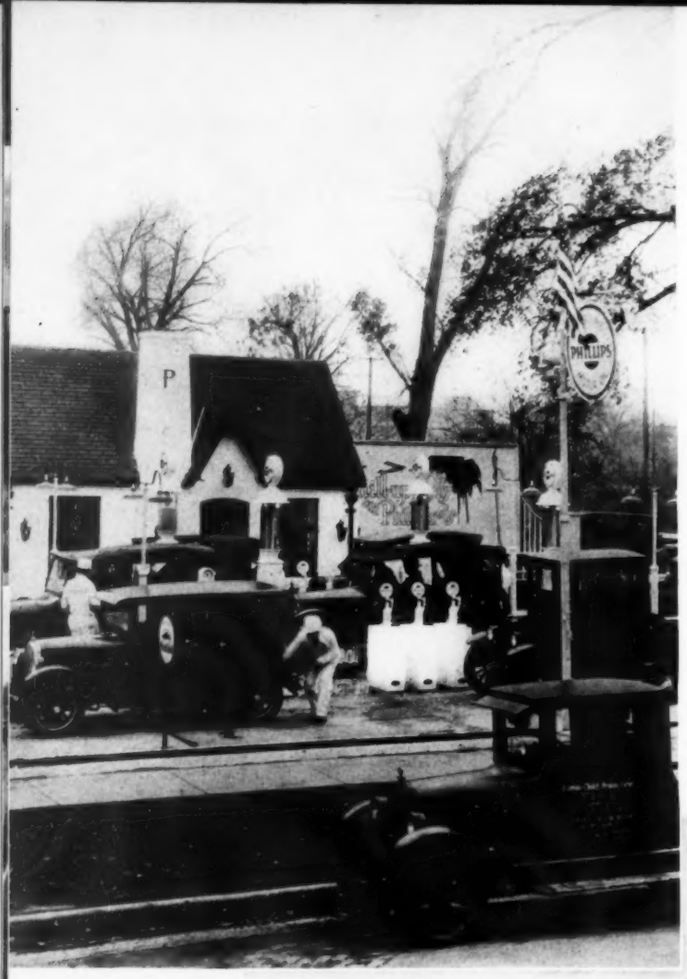
The daily average production of natural gasoline in 1917 was a mere 300 gallons. The volume was rapidly expanded to a peak of 724,665 gallons daily in 1930 when proration of oil production, which likewise affected the gases produced with the oil, called a temporary halt to the increase. By 1935, production was again increasing and rose to the record figure of 914,365 gallons daily in 1937.

Before the days of modern methods and proration the life of a gasoline plant was limited. As the supply of gas from the field in which it was located fell off it became necessary to move the plant to a new location. In 1926 the pioneer Hamilton plant was closed, and during the company's earlier history there were a number of closings and relocations along with new construction. Altogether, Phillips has operated ninety-three natural gasoline plants. At the present time it has thirty-three wholly owned plants in operation besides six which are owned jointly with other interests.

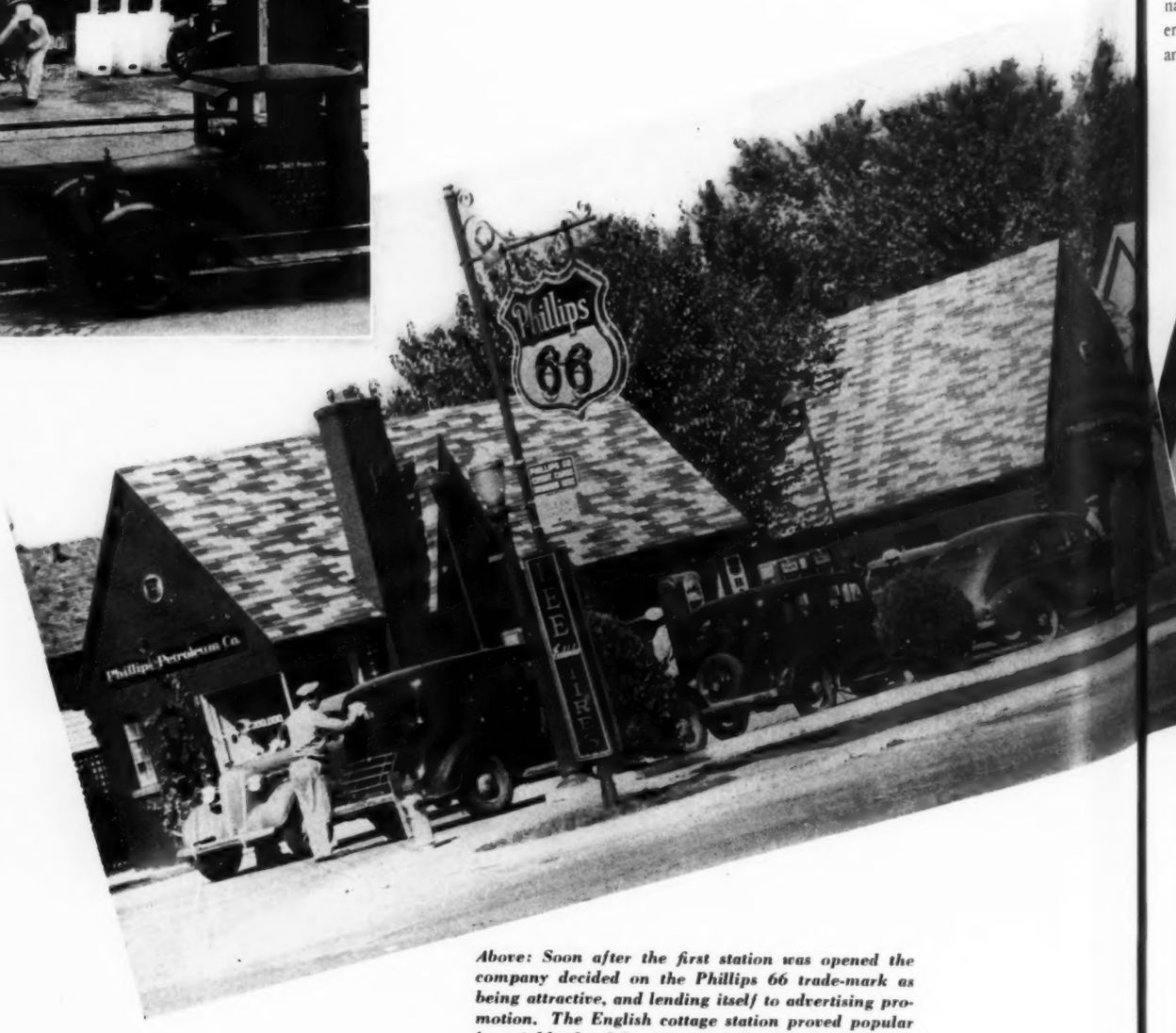
By 1927, within the comparatively short period of ten years, the company had become one of the major oil producers in the Mid-Continent and the world's largest producer of natural gasoline, but it was still dependent on others for an outlet for its production. The year 1927 was an important milestone in the development of the company. In that year it was decided to embark on a major program of integration, partly to prove the merit of natural gasoline as a blending agent for

This volatility truck, one of the group which toured Phillips' sales territory, was used as a laboratory to demonstrate controlled volatility. The trucks were in charge of technicians whose lectures were part of the company's program of consumer education.





Left: First Phillips service station, opened November 19, 1927, at Wichita, Kansas. Success of this venture encouraged the company to open stations in Salina and Topeka, Kansas, Bartlesville, Oklahoma and later throughout the entire Midwest territory.



Above: Soon after the first station was opened the company decided on the Phillips 66 trade-mark as being attractive, and lending itself to advertising promotion. The English cottage station proved popular in neighborhood locations and became the standard style for company leased outlets.

the manufacture of automobile and aviation gasoline, and partly because it was felt that the company's interests would be best served by refining, transporting, and distributing large volumes of finished petroleum products to the final consumer.

The company had become an important producer in the extensive Panhandle field of Texas. Panhandle crude had a high sulfur content and was known as a "sour oil." Its processing was difficult and presented an operating problem, the solution of which was significant of the remarkable flexibility of the Phillips Company.

In 1927 the company bought a small refinery located at Borger in the Texas Panhandle. It was classed as a skimming plant and consisted of three small towers, a maze of pipe and a miniature furnace. The absence of the usual battery of boilers and towering stacks gave the Alamo Refinery an insignificant appearance, but it effectively did the work for which it was designed. Using this plant as a nucleus, the company started its development of methods for processing Panhandle crude oil. Expansion and improvements followed rapidly, and today the original refinery unit, still in operation, is surrounded by acres of modern refinery equipment.

Under Phillips management the capacity of the refinery was increased rapidly. In 1929 it handled a daily average of almost 8,000 barrels of crude oil. The company's original and in some respects revolutionary ideas about refinery operations were later incorporated in other plant expansion and in the building of additional refineries.

In 1930, Phillips acquired the Independent Oil & Gas Company, which in addition to wide interests in various phases of the oil industry owned a refinery at Okmulgee, Oklahoma, and another at Kansas City, Kansas. The daily average crude through-put of all three refineries in that year was only 9,947 barrels. Within two years the volume was more than tripled, and by 1938 these refineries were handling 43,039 barrels of crude oil daily and showing the high gasoline yield of 66 percent, 50 percent larger than the average yield of refineries throughout the country at that time. In 1941 Phillips four refineries handled a total of 61,199 barrels daily. In no year since the company entered refining has it failed to show an increase in the volume of crude oil handled.

This spectacular growth in refining would have been impossible if the company had not discovered a successful means of invading the highly competitive field of marketing.

To introduce a new line of products in a field already fully supplied, where the competition was severe and sometimes vicious, was no easy matter. Something spectacular was needed to arrest attention and to make the name of Phillips products nationally and favorably known.

With a complete faith in his ability to offer a superior brand of motor fuel through controlling its volatility by varying the proportion of natural gasoline blended, Frank Phillips decided that his chances for capturing a substantial part of the retail market were good. The promotional aspect of the problem was the only difficulty. He found the answer in the airplane, in which he has been keenly interested from the beginning of its commercial development.

In May, 1927, Lindbergh's epoch-making flight across the Atlantic was followed by tremendous enthusiasm for aviation, and substantial prizes were being offered for all sorts of flying records. A contest that was attracting attention second only to the conquest of the Atlantic was a race across the Pacific, from Oakland, California, to

Top: The company's first aviation truck operated at the Wichita, Kansas, airport. Phillips was among the first of the oil companies to supply aviation gasoline directly to planes at airports.

Right: Philgas tank truck deliveries bring the product direct to the home. Service is in every way comparable to that of city gas.

Honolulu, Hawaii. Quietly, Frank Phillips ordered the construction of a ship to be entered in the race and arranged with Col. Arthur C. Goebel to pilot it, using Phillips aviation gasoline. Until the race began, on August 17, 1927, Goebel was hardly mentioned as a contestant, but the instant he flashed across the finish line ahead of all the others his name became a household word, and the fame of Phillips aviation gasoline was established.

Against the background of this noteworthy success the first Phillips service station was opened in Wichita, Kansas on November 19, 1927. Wichita was selected as a test because it was about the most hotly competitive sales point in the Mid-Continent, a place where all the marketing companies in the plains area were represented and where the fight for gallonage was never relaxed for a moment.

In seeking competition the infant sales organization of the Phillips Company found that it had come to the right place. As soon as its first advertisement appeared competitors went into action. The company was accused of various misdeeds, including the violation of city ordinances and obstructing traffic. The latter accusation was true, for Kansas farmers flocked to see what effect the new fuel would have on their Model T Fords. Evidently they were pleased, for they returned in increasing numbers.

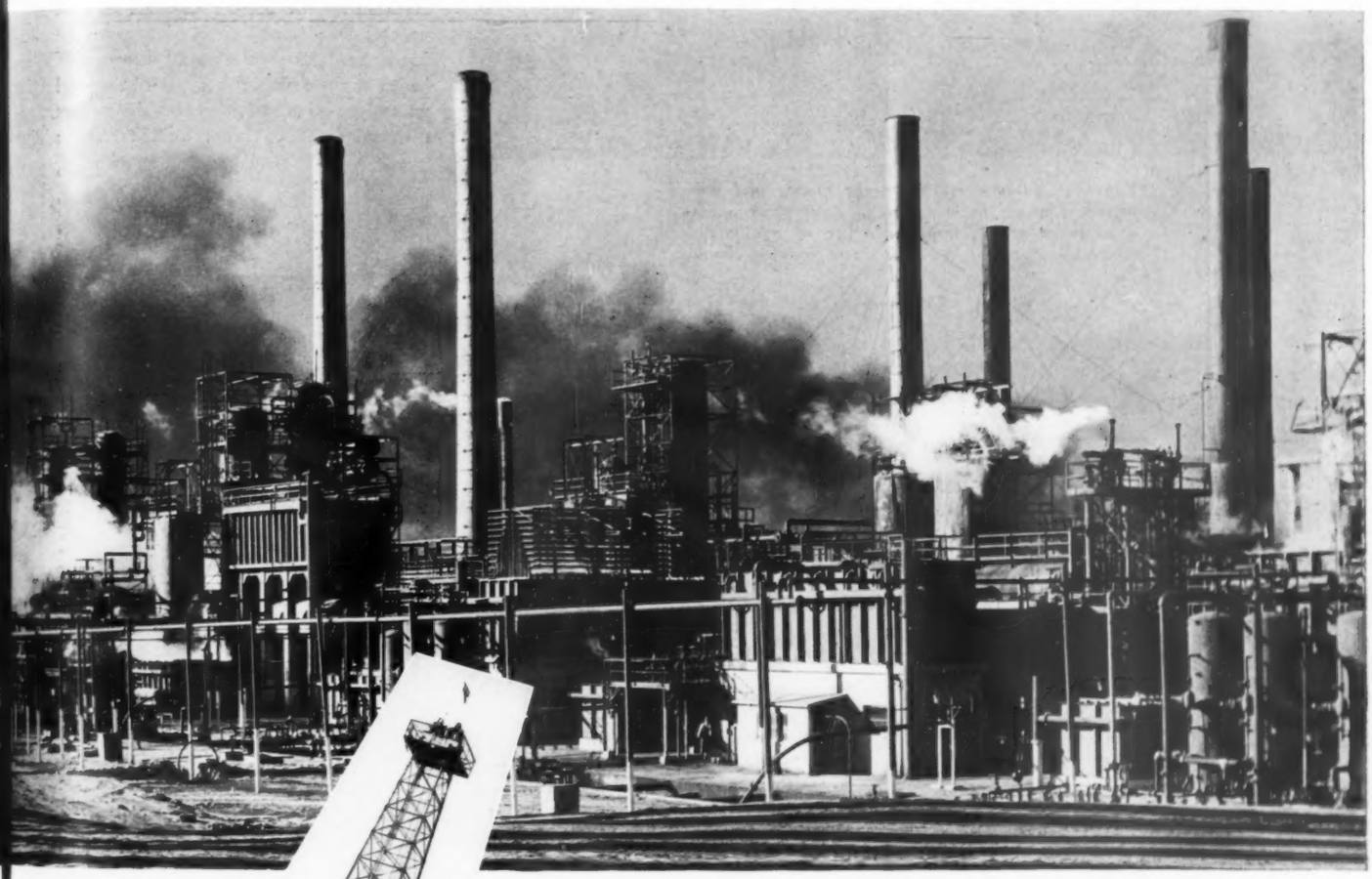
The success of this venture encouraged the company to open stations in Salina and Topeka, Kansas, and Bartlesville, Oklahoma. The plan first adopted was to operate trackside stations which could be fed directly from tank cars on railway sidings, but this was found to restrict station locations too greatly, and in 1928 the first bulk station was established at Amarillo, Texas.

A forest of derricks greeted the young banker, Frank Phillips, upon his arrival in Bartlesville in 1903. This town, then in Indian Territory, was the site of the first commercial oil well (shown on page 25) to be drilled in the present state of Oklahoma.

Conflicting explanations have been given as to the reason for selecting the magic numeral "66" as part of the Phillips trade-mark. One is that it referred to the octane rating of the gasoline originally sold, but in 1927 gasolines were not graded by octane number. Another reason given is that it designated the gravity of the gasoline, but Phillips never used gravity as an index of quality. A third is that "66" was intended to convey the idea that a car using Phillips gasoline would "go like sixty." The slogan actually employed in the early advertising, however, was "Phil-up with Phillips and Fly." The fact seems to be that "66" appealed as being a number easily remembered and strikingly adapted to signboard and other advertising use. Certainly it was well suited to skywriting, a form of publicity largely employed by the company in its earlier sales activities, much of it having been done by the same Colonel Goebel who had found that Phillips gasoline supplied him with the wings of victory in the race to Hawaii.

But there was more than a catchy name and flashy advertising behind the success of this new product, a success never before attained in the

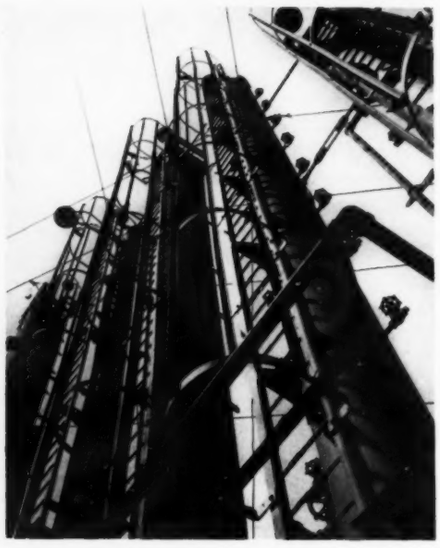
oil industry in so brief a time. The company's research work had shown that the addition of natural gasoline to refined gasoline improved the starting and traffic pick-up qualities. Experiments with specially stabilized natural gasoline showed that certain blends with refinery gasoline performed better under certain weather conditions than others. The result was the revolutionary idea of matching motor fuel to weather conditions. By controlling the volatility of motor fuel through varying blends, the company inaugurated the now conventional practice of changing motor fuel to meet seasonal temperature changes in its territory. As a part of its impressive advertising campaign the company equipped a fleet of trucks to make tests of different gasolines so that all who cared to do so could see their relative starting and accelerating qualities. These trucks toured the sales territory and provided convincing evidence of the high quality of Phillips motor fuel. The extent of the public acceptance of Phillips 66 is strikingly reflected in the fact that in the first four years of its marketing the new company captured more than 70 percent of the increase in motor fuel consumption in an area of sixteen states. Phillips' distribution of petroleum products, like its volume of refining, has never failed to show an increase in the fifteen years of its history. Its total sales of finished products now amount to more than 1,300,000,000 gallons annually.



Starting with a small skimming plant in the Texas Panhandle, Phillips rapidly expanded its refining operations until last year Phillips' four refineries handled a total of 61,199 barrels daily. Every year since the company entered refining it has shown increases.

Looking at this development through the eyes of an economist, the outstanding feature of Phillips' marketing growth was its soundness as contrasted to the prevalent practice of increasing gallonage without regard to cost. The company has never been bitten by the ambition to become a nation-wide distributor or if it has, the infection was resisted. Its marketing territory has been kept compact and limited to areas conveniently served from its refineries. This territory extends from northern Texas to the Canadian border, and from the Rockies on the west to the Ohio River and the Great Lakes on the east. Spreading out from its refineries it has followed along routes fed by its pipe lines or reached through associated lines such as those of the Great Lakes Pipe Line. The guiding principle has been to enter no territory to which the company did not have transportation costs as low as others or lower. Thus it has not attempted to move into mid-Texas or the Gulf Coast section, and it has not ventured east of Ohio except in the distribution of liquefied petroleum gases for which it has special facilities.

Throughout its marketing area the Phillips Company has paid particular attention to economical and efficient transportation, the real key to profitable marketing. The distribution of its products is directed from eleven division offices located in the business centers of the twenty-two states



Towering columns symbolize the money and man power spent on basic research. Pilot plant operations precede full, large scale use of equipment, shown above, to obtain new products from petroleum.

to which its main operations are confined. It has 759 well equipped bulk stations, and distribution is carried on through a combination of pipe line and truck facilities assuring speed and low cost. Its 14,000 stations are practically all operated by independent dealers, and its closely knit sales organization functions with a degree of efficiency matched by few companies.

In all its operations Phillips has paid particular attention to transportation, and the company has pioneered many developments in this field. The crude pipe line system of the company was a gradual evolution, growing as producing areas were extended and refineries built. In 1941 it included 1,304 miles of pipe lines which carried 39,700,000 barrels of crude oil.

While the crude pipe line system has developed along lines that are more or less conventional, the company blazed a new trail for the industry in 1930 when it started the construction of a 736-mile line from Borger, Texas, to East St. Louis, Illinois, the first long distance line to be built solely for the transportation of gasoline and other light products. Engineers in the industry did not believe the idea of a long distance gasoline line was feasible, but through the incorporation of a number of ingenious features the line was successful from the beginning.

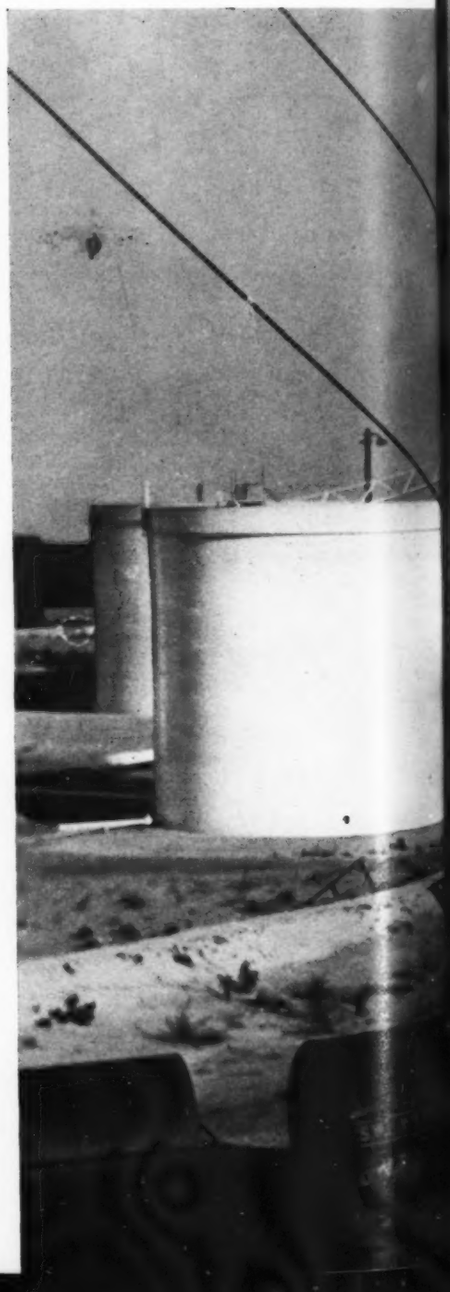
The building of this line was closely related to the expansion of the company's marketing area. As previously noted, the guiding policy in the extension of its sales operations has been to carry sales only into areas where the company could command transportation costs at least as low as any competitor. Since pipe line transportation is the most economical form that can be employed in moving petroleum products overland, Frank Phillips was determined that his marketing division should enjoy the benefit of it. So the line was built northeastward from Texas across Kansas and Missouri, following a route which carried it through the heart of the growing Phillips sales territory, and as it went forward other stations bearing the Phillips 66 shield sprang up in the new territory that was opened. It was a sort of five-year plan that added to the strength of both the transportation and marketing divisions.

At Paola, Kansas, a branch of the main line was run to the Phillips refinery at Kansas City, and a transfer connection later fed into the Great Lakes Pipe Line which was subsequently built under the joint ownership of six companies, of which Phillips was one, to provide gasoline transportation from Oklahoma to Iowa, Nebraska, Minnesota, and eastward to Chicago. Through this connection a further great section of the Middle West was opened to the extension of Phillips marketing activities by means of low cost transportation.

In 1939, the main Phillips gasoline pipe line was extended from East St. Louis to East Chicago, which gave the line a total length of 1,071 miles. At East Chicago a marine terminal provides for the transfer of products to lake barges for delivery to points on the Great Lakes—more cheap transportation. The Borger-Chicago system consists of 8-inch pipe throughout, except for one branch line, and handles more than 45,000 barrels of products daily.

Sound business practice and careful management, combined with a willingness to adopt new advantageous methods have contributed to the steady growth and progress of Phillips Petroleum Company. But these things do not entirely account for the leadership of the company in the development of new processes and products. An important factor has been research and the success with which research has been translated into profitable commercial realities.

Research work began in the early days of the company, in 1923. It took definite form in 1925 with the establishment of a research department. At that time Frank Phillips was particularly concerned with finding methods of stabilizing natural gasoline and discovering means of utilizing by-products then regarded as waste. The solution of these problems expanded the market for natural gasoline and increased the monetary return per unit of production, thereby adding



greatly to the gross income and the net earnings of the company. One of the first undertakings was an analysis of natural gasoline. In the course of this work analytical methods were developed that have since been adopted throughout the world, and have provided the foundation for the company's present leadership in gas and natural gasoline research.

Established as a separate department in 1925, the research division has grown steadily in size and in variety of activities. One of its early successes was in finding marketable uses for the light and highly volatile parts of natural gasoline which impaired its value for certain purposes. These troublesome constituents, butane and propane, became the basis for a highly important branch of the company's business which will be referred to more fully later. Study of the applications of these light products is still being carried on and new uses for them are being worked out every year.

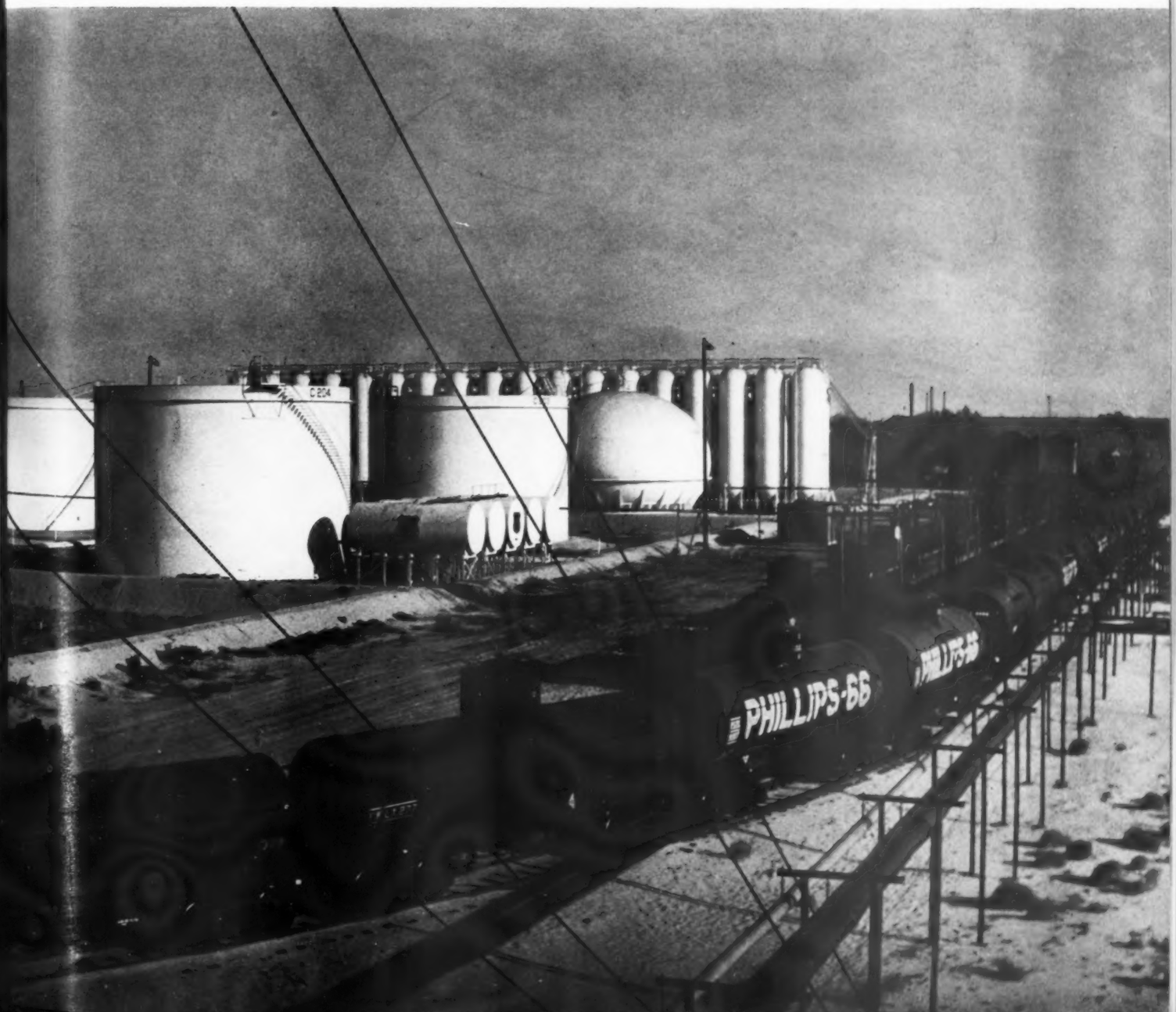
From its inception the Research Division has been primarily concerned with methods of converting light hydrocarbons to valuable products. This work was concentrated on the comparatively simple hydrocarbons which gave Phillips an early basic knowledge and experience to approach the problems of aviation gasoline, synthetic rubber, toluene, catalytic cracking, and many other new war uses for petroleum.

After years of research and pilot plant study, Phillips in 1934 erected the first commercial thermal polymerization plant which converted the lighter hydrocarbons into high quality motor fuel. Shortly thereafter, and again following preliminary research, the company installed a plant for the manufacture of iso-octane. This plant represented a bold move since it embodied three new catalytic steps, one of which is the catalytic cracking of heavy oils. During this period the simple thermal polymerization process was modified to become reversion or polyforming.

An important discovery during this research progress was the now famous alkylation reaction, and a full knowledge of the conditions surrounding this reaction. An early application of this discovery was the construction of a plant to produce neohexane, which in combination with other ingredients makes possible the manufacture of aviation gasoline with the highest octane number ever produced commercially. Other applications of alkylation reaction are being used in increasingly wider scale in the war efforts.

Another product of the research laboratory was the copper sweetening process for treating gas-

A pipe line terminal showing the many tanks needed for special grades of products which are shipped to Phillips' marketing territory, not only by tank car but by truck, barge and lake tanker.



oline, which has been developed into a separate and specialized business. This process has progressed through various stages to an extent that would require a separate article for an adequate description. Its latest application is desulfurization through the use of a catalyst, an effective and economical way of raising octane rating and improving lead susceptibility of natural, straight run, and cracked gasolines. At the end of 1941 some 138 plants, including twenty Phillips plants, were using the copper sweetening process while five catalytic desulfurization installations had been made.

When the United States embarked on a program of national defense—and subsequently war—the research division of the Phillips organization found itself ideally prepared to contribute constructively and substantially to the national effort. Except to curtail and suspend long term projects there was very little change necessary to accomplish the desired ends.

The company's background in the fundamental chemistry of hydrocarbons enabled it to assume quick leadership in the industry in applying advanced knowledge and processes in the production of vitally needed aviation fuel. The light hydrocarbon components have been found by the company to be ideally suited to the manufacture of 100-octane aviation gasoline. The company is now producing huge quantities of this product in its plants, located near the sources of raw material supply, with a smaller use of the most valuable ingredients than the industry at large. As a result, the company supplies quantities of these ingredients to others to assist them in the production of 100-octane gasoline. Operations are well suited to produce other products, such as toluene for explosives and styrene and butadiene for synthetic rubber.

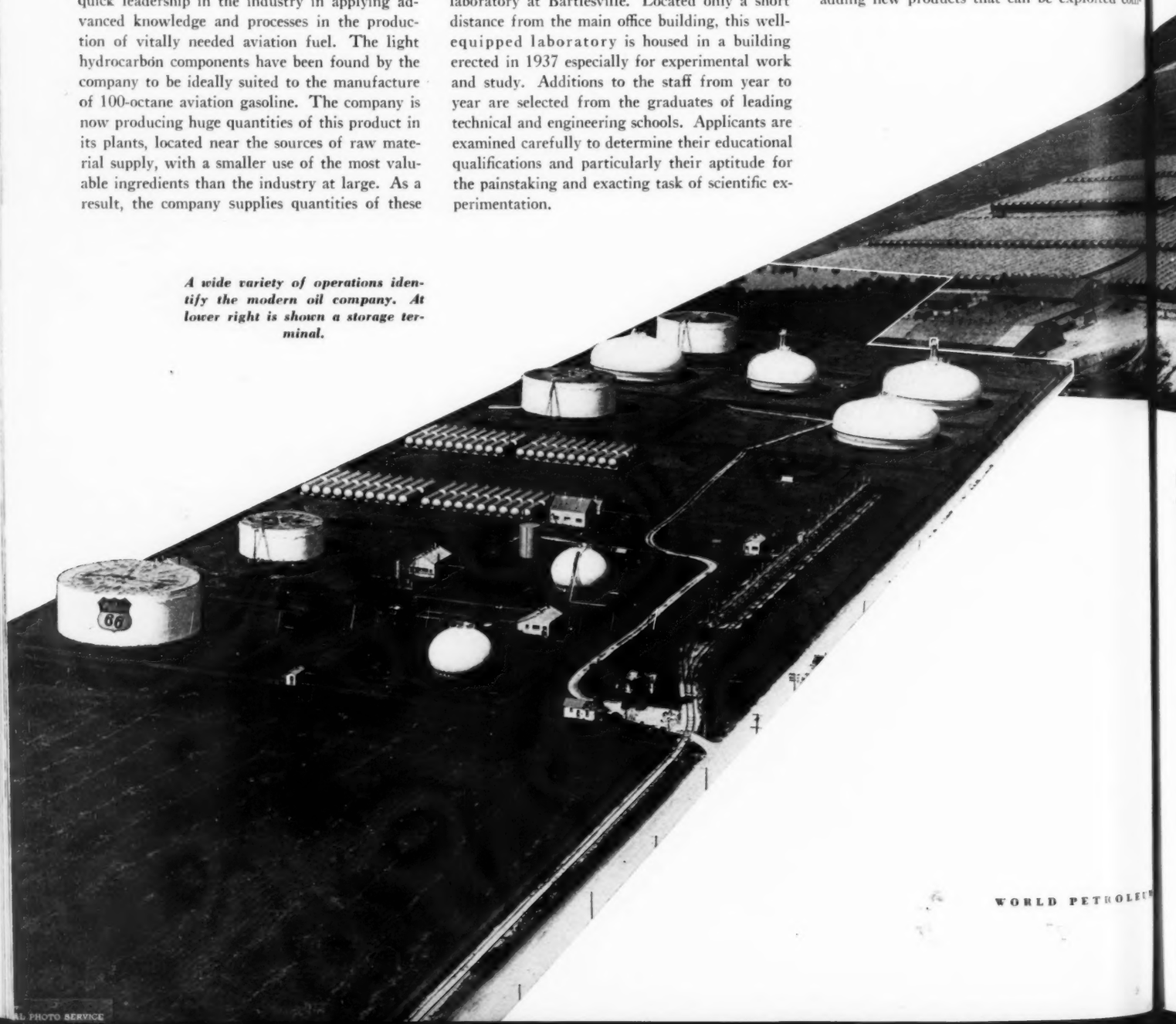
Recently, Phillips announced that it has contracts for two new plants to be designed, built, and operated by Phillips, but owned by the government. These plants will manufacture butadiene and styrene, the two chief ingredients of the most important type of synthetic rubber for the manufacture of automobile tires. According to Phillips officials, the best solution to our rubber shortage problem, at least so far as military and essential civilian uses are concerned, lies in the manufacture of synthetic rubber from butadiene and styrene. Both of these products can be made in large quantities from petroleum. Phillips is one of the few companies which has large supplies of the necessary ingredients for these products immediately available.

Phillips has over 800 technical employees on its staff and 170 of them work in the main research laboratory at Bartlesville. Located only a short distance from the main office building, this well-equipped laboratory is housed in a building erected in 1937 especially for experimental work and study. Additions to the staff from year to year are selected from the graduates of leading technical and engineering schools. Applicants are examined carefully to determine their educational qualifications and particularly their aptitude for the painstaking and exacting task of scientific experimentation.

One secret of the success that has attended the research activities of the Phillips organization is undoubtedly the close contact maintained between the operating departments of the company and the research division. Each operating division has a liaison representative or a committee assigned to keep in touch with the research organization. Conferences between groups representing the two branches are of frequent, almost daily, occurrence. Members of the research department are encouraged to maintain a true scientific attitude of mind, but they are not allowed to forget that their work has a practical side as well.

When laboratory study and experimentation has resulted in a new process or new application of an existing process some of the men who have helped to develop it are sent to aid in the design and operation of the plant equipment that it calls for. Sometimes they are called upon to explain how the new method or process can be incorporated in manufacturing procedures.

While research pays its highest dividends by improving the quality of the company's products or adding new products that can be exploited com-



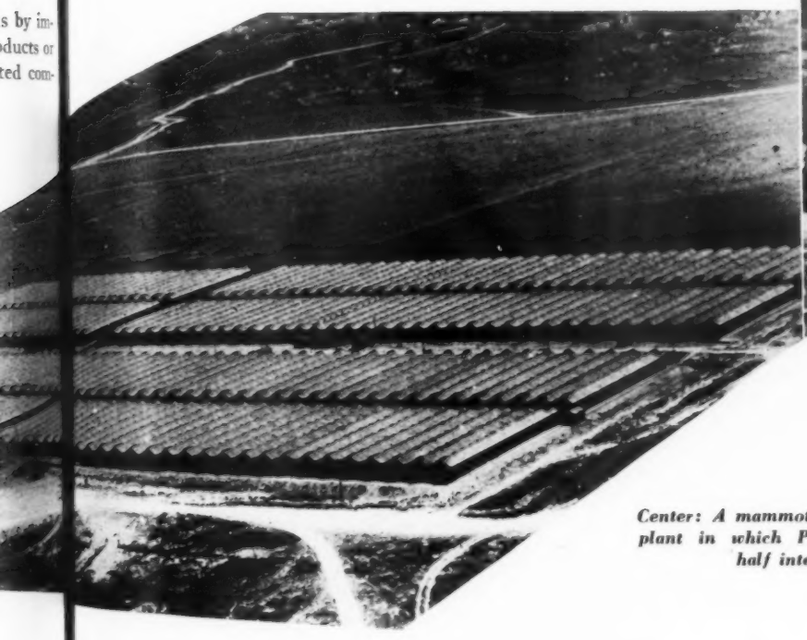
A wide variety of operations identify the modern oil company. At lower right is shown a storage terminal.

AL PHOTO SERVICE

mercially, it also adds revenue through licensing fees or royalties paid by others for use of processes or equipment. In the case of the Phillips Company, income from this source runs into substantial amounts. What research has paid the company through the expansion of its business cannot be determined exactly, but it is sufficient to justify the steady increase in the staff and facilities employed in this work and the funds devoted to it.

One of the most interesting of the specialized lines developed by the Phillips Company is the sale of butane and propane. This is conducted

Above: One of the company's main concentrations of manufacturing operations.



Center: A mammoth carbon black plant in which Phillips owns a half interest.

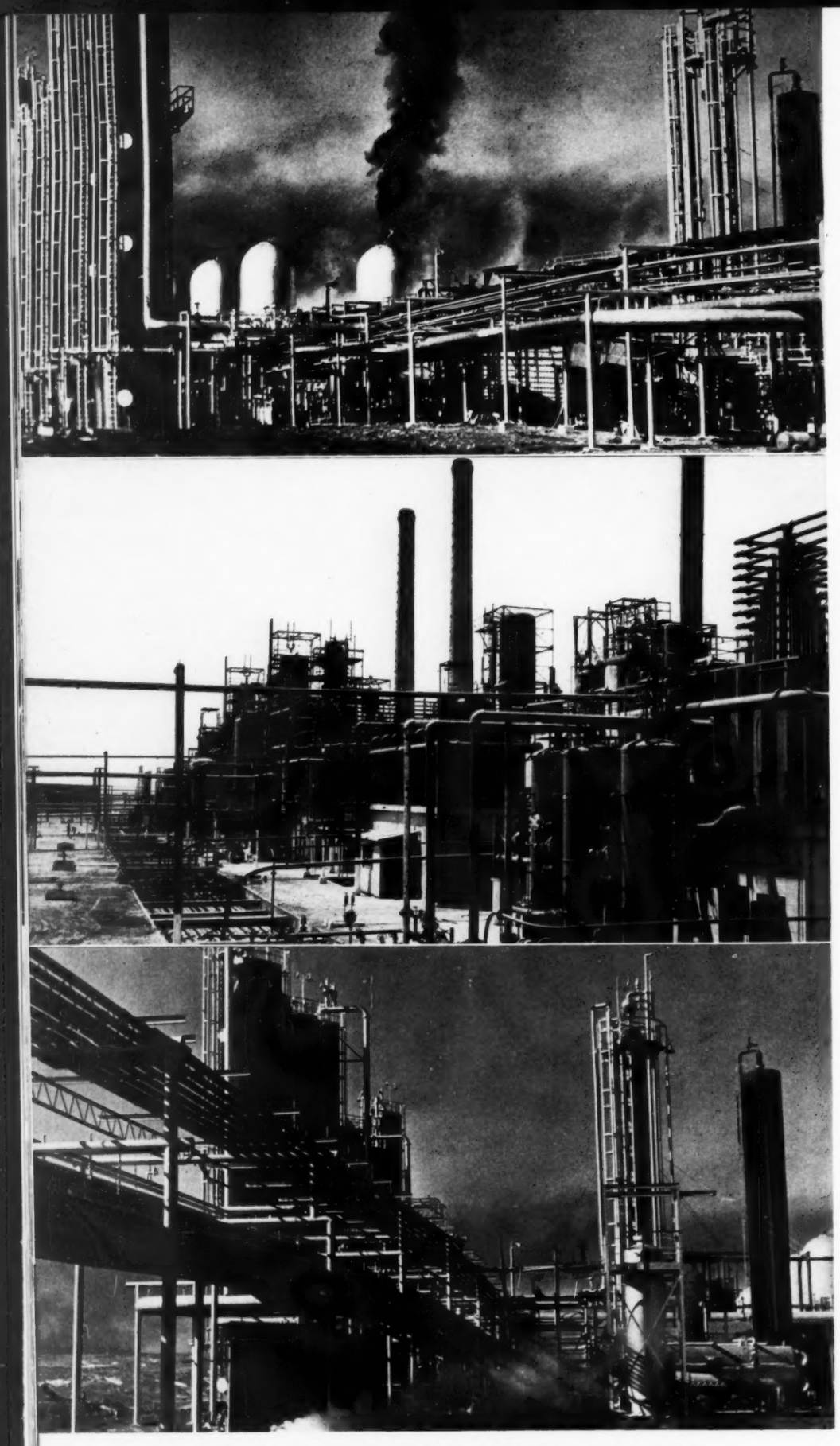
by the Philgas division of the company which operates under the direction of headquarters in Bartlesville, but has its general marketing offices in Detroit. Philgas finds an evergrowing field of usefulness in small towns and rural districts which are not served by natural gas or city gas mains.

While propane in the form of "bottled gas" had been on the market for a number of years the drawback to its use was the inconvenience of handling and attaching the heavy cylinders in which it was transported. The success of the Philgas organization has come largely through its system by which gas can be pumped from a tank wagon to an outdoor stationary tank, which in turn supplies the kitchen stove and other appliances, involving neither trouble nor risk on the part of the user. Philgas service, especially popular in the densely populated sections of the northeastern states, was later supplemented by Philgas Self-Service. This highly economical and convenient method of supplying gas service to the home was extended to rural sections of the eastern and midwestern states and gave Phillips an even stronger position in the retail distribution of liquefied petroleum gases.

Butane, the second of the liquefied petroleum gas twins, has been found to be particularly adapted to a number of industrial uses where an intense, controlled heat is required. Both propane and butane are used in the manufacture of products of all kinds and are thus performing a highly important and essential function in the nation's war program.

Another of the company's operations is an offshoot to its processing of natural gasoline. This is the making of carbon black, a highly useful substance obtained by burning the residue gas from natural gasoline plants. Phillips holds an important position in this industry, supplying gas to a large number of these plants. In addition, the company owns a 50 percent interest in some of the plants. Their usefulness to the company lies in providing a market for a by-product for which no other use is currently available.

Phillips has shown leadership in movements for the adoption of sound conservation practices in production such as unitization of pools, scientific spacing of wells, secondary recovery, and other methods of reducing operating costs and increasing the recovery from oil formations. One operation often cited to illustrate the value of unitization is the Billings Pool in Oklahoma.



Top: Fractionating columns where natural gasoline is stabilized by extracting the lighter fractions. Center: In 1934 the first plant embodying the Phillips thermal processes was erected. Bottom: Miles of pipe line run through the plants.

The Billings Pool covers little more than one square mile and, except for two wells on edge leases, is unitized and owned mostly by four large companies. The pool was discovered in 1935 and unitized in its early life. There is an intensive water drive, and the program has been to return all water to the producing formation in addition to much of the gas produced. It is interesting that this small pool has produced over 11,500,000 barrels with a bottom hole pressure drop of only 185 pounds. Since unitization the lifting cost has been less than three cents per barrel and very likely 80 per cent of the ultimate production will come from wells flowing naturally. The ultimate recovery will be increased, and there will be large savings in operating costs so that unitization will have resulted in an increased profit of several million dollars.

A striking contrast involving unitization is afforded by the original North Burbank Pool in Osage County, Oklahoma, and the South Burbank Pool which is almost directly adjoining. In both of these pools Phillips has large holdings. North Burbank has a larger number of lease owners and it was developed mostly during the period from 1923 to 1926, before the advantages of unitization were as well understood as they are today. It is estimated that savings in development costs alone under unit operation and wider well spacing in the North Burbank Pool would have amounted to over $37,000,000 irrespective of large savings in operating costs and increas oil recovery over that now anticipated.

South Burbank was developed mostly during the period from 1934 to 1936. More than half the pool has been unitized since the discovery. Wells are spaced an average of one to eighteen acres as compared to ten in North Burbank. Pressure has been partially maintained by the systematic input of produced gas with the result that the flowing life of the wells has been prolonged and the oil recovery greatly increased.

Frank Phillips has these examples, and scores of others with the figures pertaining to them, at his finger tips, and he can build them into a convincing argument in favor of unitization whenever the question comes up in relation to any field in which the company is interested.

One of the early oil developments in Oklahoma was the Nowata pool in the northeastern part of the state. Originally drilled in 1906, a pay sand from twenty to forty feet in thickness, known as the Bartlesville sand, was found at a depth of 500 feet. After producing in decreasing volume for many years and having its life prolonged by the application of vacuum and by gas and air repressuring, the leases reached the abandonment stage in the early '30's, average daily production per well having dropped to less than one-half barrel.

After a survey of the area by Phillips engineers, the company acquired a number of leases in order to try a method of secondary recovery, success-

fully employed in Eastern fields but up to that time not introduced on an extensive scale in the Mid-Continent. This is the method known to the industry as water flooding by which a large volume of water is forced into the producing sands to carry before it the oil that ordinary methods have been unable to recover.

In 1937 the initial water flood development was started on a tract of 160 acres at Coody's Bluff in the Nowata district. What is known as a five spot pattern was adopted, which means that each oil producing well is surrounded by four water input wells. Both the producing wells and the input wells are 330 feet apart which gives one oil well and one water well to each two and one-half acres, or double the well density employed in primary operations. Most old wells were plugged to lessen the possibility of water short-circuiting through existing drainage channels and fractures caused by earlier shooting. Before water was applied, 40,000,000 cubic feet of gas was pumped into the reservoir to even up the pressure and to maintain a more uniform rate of water travel through the sand.

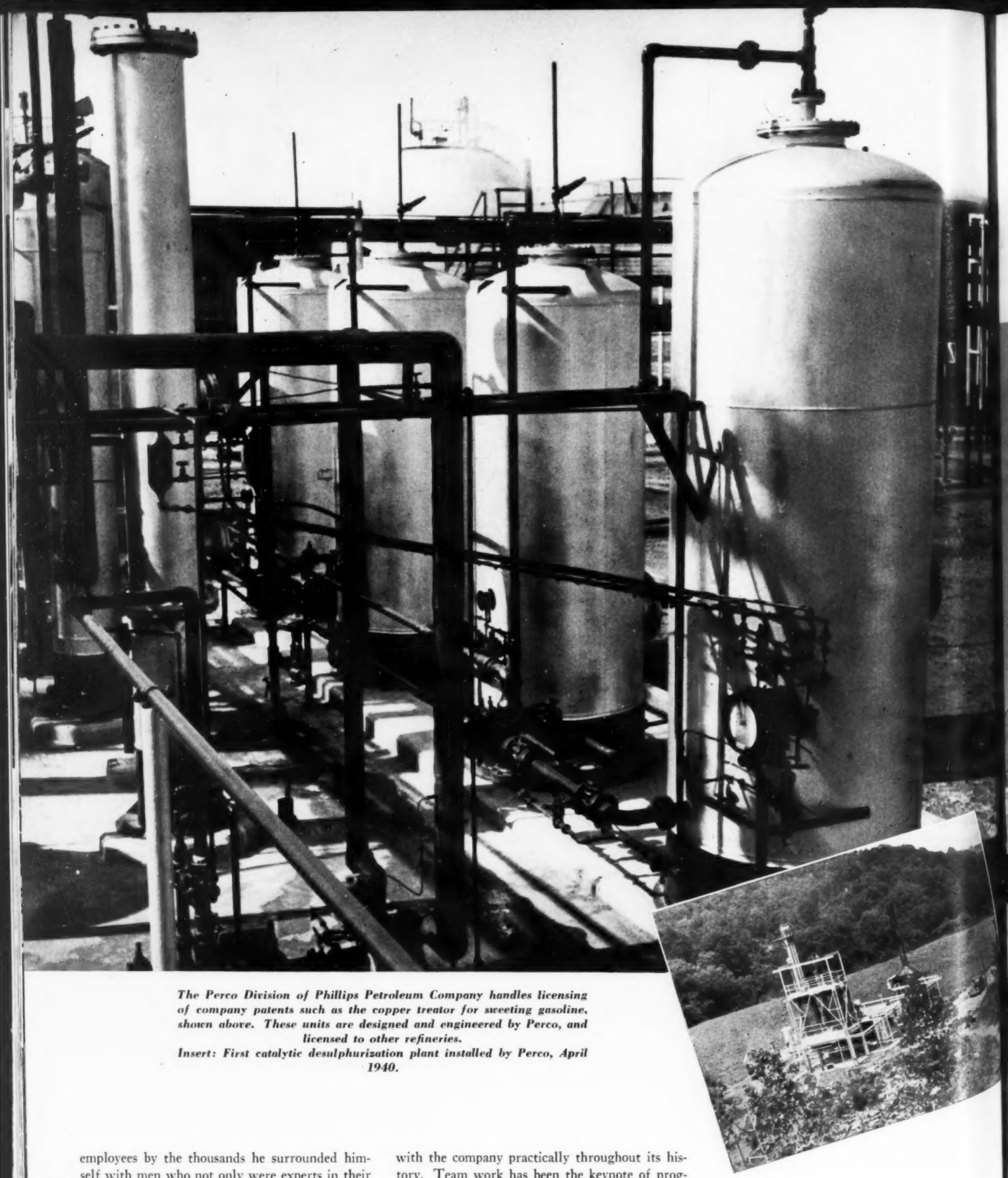
The original project has been expanded to cover a present area of 850 acres. In the five years since it was started 1,700,000 barrels of oil have been produced and it is estimated by the engineers in charge that as much oil will be produced in four to five years by water flooding as was obtained in the entire thirty years of the pool's previous history.

This water flooding project is, of course, a minor phase in the activities of the Phillips Petroleum Company. It is symptomatic, however, of the readiness of the company to adopt new ideas whenever study has shown a promise of success. The undertaking is important to the oil industry, too, because it has led the way to other secondary recovery projects in the Mid-Continent, and ultimately, no doubt, will lead to the recovery of many millions of barrels of oil that otherwise would have been lost.

The strength of any great business organization is the strength and ability of the men who run it. In the case of Phillips Petroleum Company the master builder has been Frank Phillips, who remains today the same genial, kindly, and unpretentious man who stepped off the train in Bartlesville thirty-nine years ago, and who ran the barber shop in Creston, Iowa, in the '90's. Respected by his fellow workers, beloved by all who know him, "Uncle Frank" is never happier than when he is joining in one of the picnics of Phillips employees which are made festive occasions by his presence. One of the biggest days that Bartlesville ever had was November 28, 1939, when the town, the countryside, and the whole Phillips organization turned out en masse to celebrate Frank Phillips' sixty-sixth birthday anniversary.

One proof of Frank Phillips' executive ability is seen in the fact that as his business grew from a small outfit to a company that numbered its

Top and center: Exterior and interior views of compressor station. Compressor plants are used for handling residue gas. Below: The pioneer Hamilton plant, first gasoline plant owned by the company.



The Perco Division of Phillips Petroleum Company handles licensing of company patents such as the copper treator for sweeting gasoline, shown above. These units are designed and engineered by Perco, and licensed to other refineries.
Insert: First catalytic desulphurization plant installed by Perco, April 1940.

employees by the thousands he surrounded himself with men who not only were experts in their particular fields but who shared his own enthusiasm and confidence in the future of the company. It is significant to note how many of the executive officers and heads of divisions have been with the company practically throughout its history. Team work has been the keynote of progress in the Phillips Company from the beginning and in spite of the vastly broadened scope of its operations the same spirit animates all ranks of the organization today.

Upper right: Warehouse and office at a Phillips pipe line terminal. Truck loading rack is located in yard at left background.

Lower right: Preparing to drop 8-inch pipe line into the ditch. Tractors in the background are swinging the pipe into place. The umbrella is for use by the welder: it protects him against the sun but, more important, it protects his arc from the wind.

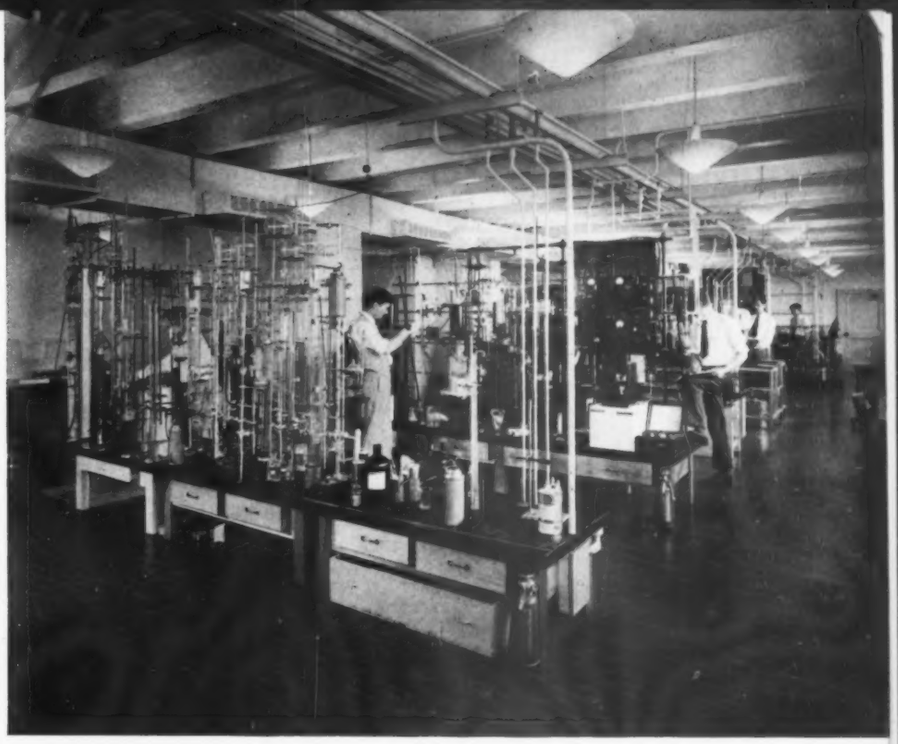
Lower left: Lake tanker ready for loading at Great Lakes terminal.

In 1937, with the company firmly established as a fully integrated, financially strong, and independent concern, and after twenty-one years of service as its directing head, Frank Phillips felt that he was ready to relinquish some of his responsibilities. In doing so he had a successor ready trained who had come up through the ranks of the Phillips organization and was thoroughly familiar with all its operations. So, in 1938, Frank Phillips became Chairman of the Board of Directors and K. S. Adams, at the age of thirty-nine, became President of the company.

President Adams has been familiarly known as "Boots" Adams since he entered the service of the company in 1920 as a warehouse clerk and became a star player on the Phillips basketball team. After he had worked his way through various departments he was appointed to the post of Assistant Secretary in 1927 and Assistant Treasurer in 1928. In August, 1932, he was made Assistant to the President, Frank Phillips. In this position he became thoroughly familiar with the executive duties involved in directing the affairs of the corporation, and his later promotions followed naturally.

On April 30, 1935, Adams was elected a member of the Board of Directors and Executive Committee and was made Treasurer of the company. He retained, however, his position as Assistant to

Storage at a Phillips refinery. The tall blimps are for high pressure storage, the spheroids hold other finished products.



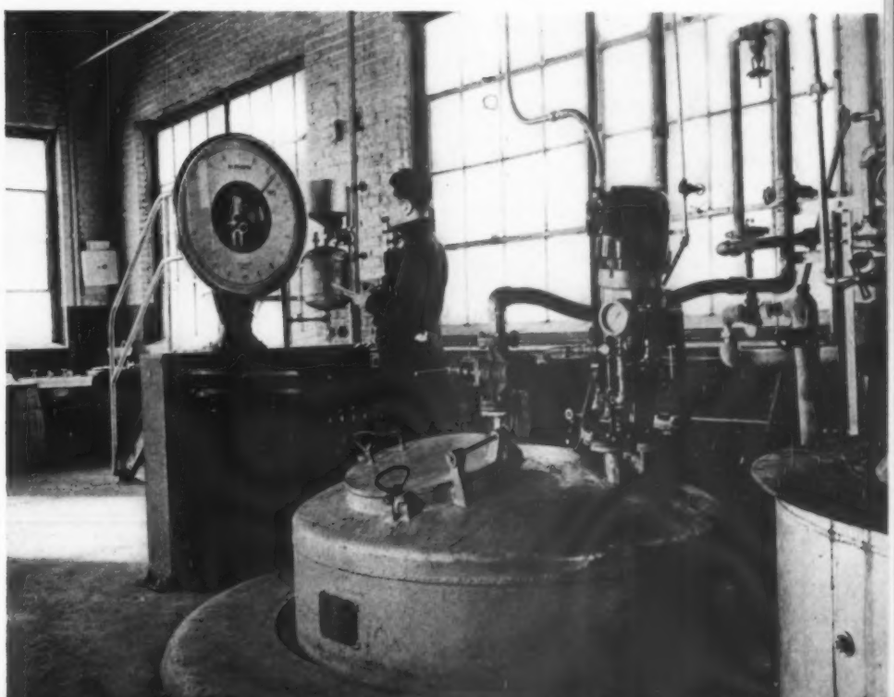
Above: Interior of one of the modern laboratories in Phillips' new research building at Bartlesville. Built of glass brick and air conditioned throughout, this is one of the most up-to-date research buildings in the industry.

the President. Effective January 1, 1938, he was elected Executive Vice-President and a few months later, April 26, 1938, he advanced to the presidency, probably the youngest man to become chief executive of a major oil company.

The problems of a great company, such as Phillips has grown to be, are largely financial, and if President Adams can be said to have a specialty it is in the field of finance. But he is thoroughly familiar with all the varied operations of the organization and keeps closely in touch with its activities. He has the active mind, the youthful enthusiasm, the ability to make prompt decisions, and the capacity for hard work that are the essentials of business leadership.

Frank Phillips still keeps his finger on the pulse of the business, still brings to its problems the ripened counsel of his years of experience. Bartlesville is still his home town, and when he is there he likes to spend such time as is not occupied with business conferences in chatting with the men who have been associated with him in bringing the company to its present position or in joining in a picnic or a barbecue at the 4,000-acre FP Ranch a few miles away. He has so stamped his personality on the organization which he built that his basic principles of flexible operation and aggressive leadership will always carry on. The spirit of youth, the spirit of progress, the spirit of the great Southwest will remain always with Frank Phillips, whatever the number of his years.

Below: Interior view of synthetic rubber plant.



Industry's Immediate Financial Outlook Darkened by WAR MEASURES

By Henry E. Rose

Decreased Sales of Gasoline, Increased Transportation Costs and Price Ceiling Reflected in Lower Nation-Wide Earning Prospects for War Period

THE American oil industry faces an uncertain future. Its difficulties are directly attributable to transportation shortages caused by the war economy. These are affecting all divisions of the industry currently in certain geographical areas, and are gradually filtering through to other sections. Briefly, the trouble began in the movement of crude oil and products from the Gulf and Caribbean areas to the important Atlantic seaboard consuming section by the industry's normal medium of tankers. Approximately 95 percent of the East Coast's needs were supplied by tankers in pre-war times, with little reliance upon other methods such as pipe lines and railroad tank cars. Movement by the latter, in ordinary times, is more costly than by tankers. Submarine sinkings of tankers, plus diversions of other vessels to more important war-time duties, caused the Federal Petroleum Coordinator to declare recently that, for all practical purposes, tankers may be considered out of service for the duration. The result has been that in utilizing the pipe lines and tank cars, and some inland water ways, to their present maximum, it has been possible to bring into the East Coast only about 45 percent of normal unrationed requirements. For this reason, a system of temporary card rationing—from May 15 to July 1—has been put into effect on gasoline, and deliveries of fuel oil have been reduced by 50 percent. A permanent gasoline rationing plan is contemplated beginning July 1.

To add to the East Coast's woes, the Federal Petroleum Coordinator has ordered that all remaining transportation facilities be used to their fullest extent in the movement of fuel oil from the mid-continent and southwest areas in order to assure supplies to defense industries and for heating, at the expense of gasoline. This is tantamount to the industry's engaging in an unprofitable business as against its profit item—gasoline. Bunker fuel oil purchased in the Gulf Coast, as an instance, plus transportation and handling in New York, costs about $2.25 a barrel laid down; still the industry, under price ceilings established by the government, cannot charge more than $1.55 for this product. Because of higher transportation costs, the East Coast industry is losing an estimated $1,000,000 daily on sales of all refined products. Efforts to obtain authorization from the government to advance quotations to compensate for the higher delivery costs have not been successful. An estimated 2½ cents a gallon for gasoline and fuel oils is needed to defray the additional expenses involved.

Anent the plight of the industry on the Atlantic Seaboard, W. F. Humphrey, president of Tide Water Associated Oil Co., said recently: "It is hopeful that there may be some way of overcoming these excessive costs but at the present time the operations are not, and may not be expected to be, profitable for most companies operating exclusively in the Atlantic coastal area." He added that for his company he hoped that it would be able to make up the deficit in other areas—mid-continent and Pacific Coast.

Messrs. Walter C. Teagle, chairman, and W. S. Farish, president, of Standard Oil Co. (N. J.), in their comment that prospects are "not good for 1942," said: "Our situation underwent a radical change in this respect with our entrance into war, and it is now apparent that adverse factors will seriously affect profits in 1942. The consumption of petroleum products through normal channels has been greatly curtailed, largely because of the shortage of tankers. There has been a large increase in costs directly due to the war. Expenses in all operations have been advanced substantially and with the smaller volume available, unit costs per gallon are higher. Tanker transportation costs have reached record high levels. It has become necessary to supplement water-borne movements by employing tank cars and pipe lines regardless of the costs involved. Such advances as have been permitted in the price of products have not covered the additional freight."

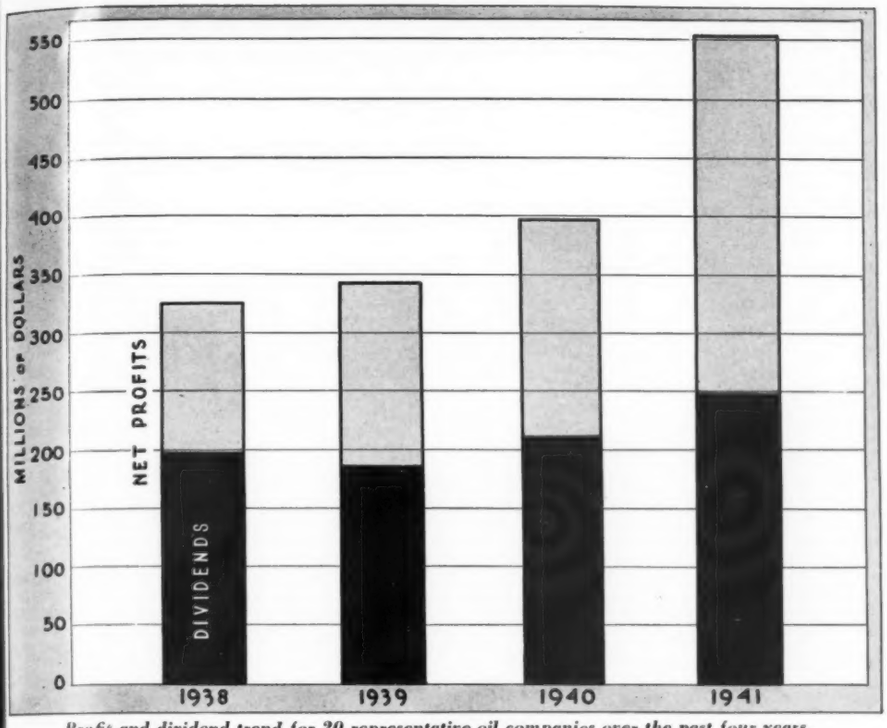
While profits of the East Coast industry have been trending downward each month this year, January and February continued to make good showings—in most cases profits were materially higher than a year ago based on higher product prices against the similar period in 1941. March, however, began to reflect the excessive transportation costs. This is illustrated in the income account of Atlantic Refining Co., almost exclusively an eastern marketing company. In the first two months of this year its profits were materially higher than in the similar period a year ago, but March showed a sizable loss. In consequence of the showing, the directors recently decided to reduce the quarterly dividend on common stock to 15 cents a share, from 25 cents. For the first three months to March 31 this year, net profits were equal to 41 cents a share of outstanding common stock, after preferred dividend requirements. This compared with 98 cents a share netted in the similar three months a year ago.

Net Profit and Per Share Earnings for 26 Representative Companies

(Quarter Ended March 31)

	1942		1941	
	Net Income	A Share on Com.	Net Income	A Share on Com.
Atlantic Refining	(*) $1,237,035	$ .41	$2,747,510	$ .98
Barnsdall Oil	775,248	.35	486,569	.21
Continental	3,544,165	.76	1,215,582	.26
Darby Petroleum	170,768	.49	111,579	.32
Houston Oil	512,689	a1 .43	423,280	a1 .18
Lion Oil Refg.	254,194	.58	125,574	.29
Maracaibo Oil	11,734	b	8,740	b
Mid-Continent Pete	1,676,157	.90	524,629	.28
Ohio Oil	2,953,075	.40	1,933,772	.22
Pacific Western	3,639	..	(d) 36,527	..
Panhandle Pdcg. & Refg.	33,046	.04	21,897	.02
Phillips Pete	3,364,551	.76	3,307,892	.74
Plymouth	464,276	.45	245,086	.24
Quaker State Refg.	429,093	.46	218,055	.24
Seaboard Oil	270,930	.22	264,358	.21
Skelly Oil	1,300,036	1.32	898,917	.91
Shell Union	4,656,546	.36	3,621,794	.28
Standard Oil (Calif)	5,458,952	.42	4,799,184	.37
Standard Oil (Ohio)	1,051,017	1.19	1,206,758	1.17
Superior (Del.)	(d) 21,540	..	49,588	.03
Superior (Calif.)	2,258,061	5.34	463,617	1.10
Texas Co.	(†) 7,900,000	.73	6,600,000	.61
Texas Pac. Coal & Oil	266,552	.30	195,597	.22
Tide Water	3,199,038	.41	2,859,950	.36
Union Oil (Calif.)	728,380	.16	1,273,006	.27
Universal Consol. Oil	31,085	.16	1,961	.01

(*) After reserves of $500,000 for taxes and contingencies.
(†) After reserves of $5,000,000 for taxes and contingencies.
(a) On preferred stock.
(b) Before taxes.
(d) Deficit.



Profit and dividend trend for 20 representative oil companies over the past four years.

Most other companies operating on the Eastern seaboard, however, have stakes in other areas, and abroad, which are still profitable and these, temporarily, tend to offset the unsatisfactory showing being experienced in the east. How long these companies can continue suffering losses on the Eastern Coast without serious financial impairment is problematical. Meanwhile they are continuing to seek permission to advance prices and are hopeful that some method will be found to alleviate their plight. Companies operating in the interior, where there are no transportation problems, continue to fare well and their profits, on the whole, are running well ahead of a year ago.

In view of the possibility that tanker transportation may not be restored for the duration, the eastern companies are again urging construction of at least one huge pipe line—possibly two lines—from the southwest to New York and Philadelphia. Twice rejected, the proposal again is headed for consideration by the War Production Board, and in the opinion of oil executives, faces a better chance of approval than before. It would probably be financed by the government and cost approximately $95,000,000. It would be capable of transporting about 300,000 bbl. of oil daily and would take about a year to construct, assuming that priorities are granted immediately and equipment is made available. Meanwhile, the industry has plans to re-lay existing pipe lines, reverse the flow of others from westward to the eastward, and utilize inland waterways more extensively. Even these arrangements, however, will not enable it to add materially to deliveries for the remainder of this year. By all methods of delivery, the Petroleum Industry War Council, composed of leading executives in the industry, estimates that the movement to the east will approximate 850,000 bbl. daily, or half of that normally needed to supply East Coast needs.

The transportation situation is probably the most vital problem affecting the industry today. It already has had repercussions elsewhere, especially in the important Gulf coastal reservoir where supplies of both crude oil and refined products have accumulated because of the lack of tanker facilities. It has had a further reaction in the closing of several important Gulf Coast refineries and it has caused a sharp curtailment in crude production allowables in Texas which, normally, produces about 40 percent of the country's oil. For May, the Federal Petroleum Coordinator recommended that Texas' output of crude oil be established at 960,000 bbl. daily. This is the smallest in almost a decade. In January and February, as an instance, Texas was producing in excess of 1,550,000 bbl. daily. In consequence of restrictions in Texas, the countrywide output of crude oil in the four weeks ended May 9 averaged 3,501,000 bbl., while in February it averaged 4,127,100 bbl. daily. Producing and refining companies in Texas are also feeling the effects of transportation shortages.

Other factors exerting an adverse influence on the industry, with a consequent reaction on profits, include: (1) the cessation of production and sale of new passenger cars; (2) restrictions on the sale of new tires because of the rubber shortage; (3) increased unit costs of operation, especially on the eastern seaboard, because of transportation shortages; (4) an increase in the yield of less profitable products, such as fuel oil, to the detriment of gasoline, normally the major profit item of the industry; and (5) the certainty of increased federal taxation which will reduce net income available for dividends.

The restrictions on the production of new cars, together with tire rationing, will be reflected increasingly as time goes on. The rubber situation being what it is — gravely critical — does not promise tires for the average motorist for at least three years, even with the proposed production of synthetic rubber. Government officials, in fact, have declared that there will be no tires for passenger cars until after the war. All these influences, ultimately, will affect profits of the industry. While the mid-continent companies, temporarily, are in an improved position in respect of transportation, they, too, will be affected by prohibitions on the sale of new cars and tire rationing. Moreover, the government has indicated that it may be necessary to ration gasoline on a nationwide basis for the sole purpose of conserving present tires for the military if that emergency develops. Pacific Coast companies are almost in a condition similar to that of their eastern neighbors. Tanker transportation is having its effect there in reduced deliveries to the northwest—Oregon and Washington—and rationing of gasoline has had to be enforced in those two states. Increased costs of operation, plus other factors previously mentioned, also are influencing operations in that section. From these deductions, it is clearly evident that the outlook for the industry is clouded. At no previous time in its history has the industry experienced such confusion and, simultaneously, been unable to make definite plans for the future.

There are a few encouraging situations, however, but these are inconsequential in relation to the uncertainties. It is almost sure that the demand for oil products to prosecute the war will fall more heavily upon the American oil industry. The loss of Netherlands India, Borneo and Burma, producing an aggregate of 75,000,000 bbl. annually, will have to be made up by other sources of supply. Even after the war, the United States, in all probability, will be called upon to furnish a substantial part of that former production—at least until it can be re-established. A small part of the loss being suffered by the purely oil business is also being made up in production of essential war materials by the industry. These include increased quantities of aviation gasoline, toluol, glycerine and butadiene, the essential ingredient in synthetic rubber. The industry, too, will be in a better position from the standpoint of equipment than most other industries. It has not over-extended, for priority reasons, its construction program and, hence, when the war terminates, will be in a sound position.

For the first quarter of this year profits of 26 companies reporting for that interim showed an improvement of 26 percent as compared with the corresponding period in 1941. The betterment reflected an increase in sales volume, especially in the first two months, and higher average prices

Industry's Immediate Financial Outlook Darkened by WAR MEASURES

By Henry E. Rose

Decreased Sales of Gasoline, Increased Transportation Costs and Price Ceiling Reflected in Lower Nation-Wide Earning Prospects for War Period

THE American oil industry faces an uncertain future. Its difficulties are directly attributable to transportation shortages caused by the war economy. These are affecting all divisions of the industry currently in certain geographical areas, and are gradually filtering through to other sections. Briefly, the trouble began in the movement of crude oil and products from the Gulf and Caribbean areas to the important Atlantic seaboard consuming section by the industry's normal medium of tankers. Approximately 95 percent of the East Coast's needs were supplied by tankers in pre-war times, with little reliance upon other methods such as pipe lines and railroad tank cars. Movement by the latter, in ordinary times, is more costly than by tankers. Submarine sinkings of tankers, plus diversions of other vessels to more important war-time duties, caused the Federal Petroleum Coordinator to declare recently that, for all practical purposes, tankers may be considered out of service for the duration. The result has been that in utilizing the pipe lines and tank cars, and some inland water ways, to their present maximum, it has been possible to bring into the East Coast only about 45 percent of normal unrationed requirements. For this reason, a system of temporary card rationing—from May 15 to July 1—has been put into effect on gasoline, and deliveries of fuel oil have been reduced by 50 percent. A permanent gasoline rationing plan is contemplated beginning July 1.

To add to the East Coast's woes, the Federal Petroleum Coordinator has ordered that all remaining transportation facilities be used to their fullest extent in the movement of fuel oil from the mid-continent and southwest areas in order to assure supplies to defense industries and for heating, at the expense of gasoline. This is tantamount to the industry's engaging in an unprofitable business as against its profit item—gasoline. Bunker fuel oil purchased in the Gulf Coast, as an instance, plus transportation and handling in New York, costs about $2.25 a barrel laid down; still the industry, under price ceilings established by the government, cannot charge more than $1.55 for this product. Because of higher transportation costs, the East Coast industry is losing an estimated $1,000,000 daily on sales of all refined products. Efforts to obtain authorization from the government to advance quotations to compensate for the higher delivery costs have not been successful. An estimated 2½ cents a gallon for gasoline and fuel oils is needed to defray the additional expenses involved.

Anent the plight of the industry on the Atlantic Seaboard, W. F. Humphrey, president of Tide Water Associated Oil Co., said recently: "It is hopeful that there may be some way of overcoming these excessive costs but at the present time the operations are not, and may not be expected to be, profitable for most companies operating exclusively in the Atlantic coastal area." He added that for his company he hoped that it would be able to make up the deficit in other areas—mid-continent and Pacific Coast.

Messrs. Walter C. Teagle, chairman, and W. S. Farish, president, of Standard Oil Co. (N. J.), in their comment that prospects are "not good for 1942," said: "Our situation underwent a radical change in this respect with our entrance into war, and it is now apparent that adverse factors will seriously affect profits in 1942. The consumption of petroleum products through normal channels has been greatly curtailed, largely because of the shortage of tankers. There has been a large increase in costs directly due to the war. Expenses in all operations have been advanced substantially and with the smaller volume available, unit costs per gallon are higher. Tanker transportation costs have reached record high levels. It has become necessary to supplement water-borne movements by employing tank cars and pipe lines regardless of the costs involved. Such advances as have been permitted in the price of products have not covered the additional freight."

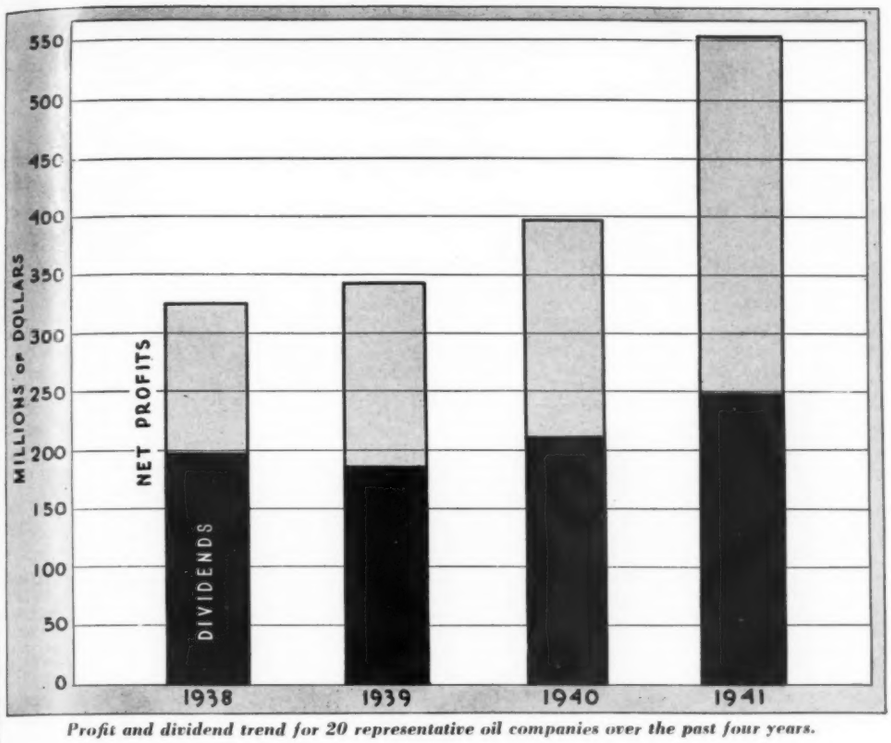
While profits of the East Coast industry have been trending downward each month this year, January and February continued to make good showings—in most cases profits were materially higher than a year ago based on higher product prices against the similar period in 1941. March, however, began to reflect the excessive transportation costs. This is illustrated in the income account of Atlantic Refining Co., almost exclusively an eastern marketing company. In the first two months of this year its profits were materially higher than in the similar period a year ago, but March showed a sizable loss. In consequence of the showing, the directors recently decided to reduce the quarterly dividend on common stock to 15 cents a share, from 25 cents. For the first three months to March 31 this year, net profits were equal to 41 cents a share of outstanding common stock, after preferred dividend requirements. This compared with 98 cents a share netted in the similar three months a year ago.

Net Profit and Per Share Earnings for 26 Representative Companies

(Quarter Ended March 31)

	1942		1941	
	Net Income	A Share on Com.	Net Income	A Share on Com.
Atlantic Refining	(*) $1,237,035	$ .41	$2,747,510	$ .98
Barnsdall Oil	775,248	.35	486,569	.21
Continental	3,544,165	.76	1,215,582	.26
Darby Petroleum	170,768	.49	111,579	.32
Houston Oil	512,689	a1 .43	423,280	a1 .18
Lion Oil Refg.	254,194	.58	125,574	.29
Maracaibo Oil	11,734	b	8,740	b
Mid-Continent Pete	1,676,157	.90	524,629	.28
Ohio Oil	2,953,075	.40	1,933,772	.22
Pacific Western	3,039	..	(d) 36,527	..
Panhandle Pdcg. & Refg.	33,046	.04	21,897	.02
Phillips Pete	3,364,551	.76	3,307,892	.74
Plymouth	464,276	.45	245,086	.24
Quaker State Refg.	429,093	.46	218,055	.24
Seaboard Oil	270,930	.22	264,358	.21
Skelly Oil	1,300,036	1.32	898,917	.91
Shell Union	4,656,546	.36	3,621,794	.28
Standard Oil (Calif)	5,458,952	.42	4,799,184	.37
Standard Oil (Ohio)	1,051,017	1.19	1,206,758	1.47
Superior (Del.)	(d) 21,540	..	49,588	.03
Superior (Calif.)	2,258,061	5.34	463,617	1.10
Texas Co.	(†) 7,900,000	.73	6,600,000	.61
Texas Pac. Coal & Oil	266,552	.30	195,597	.22
Tide Water	3,199,038	.41	2,859,950	.36
Union Oil (Calif.)	728,380	.16	1,273,006	.27
Universal Consol. Oil	31,085	.16	1,961	.01

(*) After reserves of $500,000 for taxes and contingencies.
(†) After reserves of $5,000,000 for taxes and contingencies.
(a) On preferred stock.
(b) Before taxes.
(d) Deficit.



Profit and dividend trend for 20 representative oil companies over the past four years.

Most other companies operating on the Eastern Seaboard, however, have stakes in other areas, and abroad, which are still profitable and these, temporarily, tend to offset the unsatisfactory showing being experienced in the east. How long these companies can continue suffering losses on the Eastern Coast without serious financial impairment is problematical. Meanwhile they are continuing to seek permission to advance prices and are hopeful that some method will be found to alleviate their plight. Companies operating in the interior, where there are no transportation problems, continue to fare well and their profits, on the whole, are running well ahead of a year ago.

In view of the possibility that tanker transportation may not be restored for the duration, the eastern companies are again urging construction of at least one huge pipe line—possibly two lines—from the southwest to New York and Philadelphia. Twice rejected, the proposal again is headed for consideration by the War Production Board, and in the opinion of oil executives, faces a better chance of approval than before. It would probably be financed by the government and cost approximately $95,000,000. It would be capable of transporting about 300,000 bbl. of oil daily and would take about a year to construct, assuming that priorities are granted immediately and equipment is made available. Meanwhile, the industry has plans to re-lay existing pipe lines, reverse the flow of others from westward to the eastward, and utilize inland waterways more extensively. Even these arrangements, however, will not enable it to add materially to deliveries for the remainder of this year. By all methods of delivery, the Petroleum Industry War Council, composed of leading executives in the industry, estimates that the movement to the east will approximate 850,000 bbl. daily, or half of that normally needed to supply East Coast needs.

The transportation situation is probably the most vital problem affecting the industry today. It already has had repercussions elsewhere, especially in the important Gulf coastal reservoir where supplies of both crude oil and refined products have accumulated because of the lack of tanker facilities. It has had a further reaction in the closing of several important Gulf Coast refineries and it has caused a sharp curtailment in crude production allowables in Texas which, normally, produces about 40 percent of the country's oil. For May, the Federal Petroleum Coordinator recommended that Texas' output of crude oil be established at 960,000 bbl. daily. This is the smallest in almost a decade. In January and February, as an instance, Texas was producing in excess of 1,550,000 bbl. daily. In consequence of restrictions in Texas, the countrywide output of crude oil in the four weeks ended May 9 averaged 3,501,000 bbl., while in February it averaged 4,127,100 bbl. daily. Producing and refining companies in Texas are also feeling the effects of transportation shortages.

Other factors exerting an adverse influence on the industry, with a consequent reaction on profits, include: (1) the cessation of production and sale of new passenger cars; (2) restrictions on the sale of new tires because of the rubber shortage; (3) increased unit costs of operation, especially on the eastern seaboard, because of transportation shortages; (4) an increase in the yield of less profitable products, such as fuel oil, to the detriment of gasoline, normally the major profit item of the industry; and (5) the certainty of increased federal taxation which will reduce net income available for dividends.

The restrictions on the production of new cars, together with tire rationing, will be reflected increasingly as time goes on. The rubber situation being what it is — gravely critical — does not promise tires for the average motorist for at least three years, even with the proposed production of synthetic rubber. Government officials, in fact, have declared that there will be no tires for passenger cars until after the war. All these influences, ultimately, will affect profits of the industry. While the mid-continent companies, temporarily, are in an improved position in respect of transportation, they, too, will be affected by prohibitions on the sale of new cars and tire rationing. Moreover, the government has indicated that it may be necessary to ration gasoline on a nationwide basis for the sole purpose of conserving present tires for the military if that emergency develops. Pacific Coast companies are almost in a condition similar to that of their eastern neighbors. Tanker transportation is having its effect there in reduced deliveries to the northwest—Oregon and Washington—and rationing of gasoline has had to be enforced in those two states. Increased costs of operation, plus other factors previously mentioned, also are influencing operations in that section. From these deductions, it is clearly evident that the outlook for the industry is clouded. At no previous time in its history has the industry experienced such confusion and, simultaneously, been unable to make definite plans for the future.

There are a few encouraging situations, however, but these are inconsequential in relation to the uncertainties. It is almost sure that the demand for oil products to prosecute the war will fall more heavily upon the American oil industry. The loss of Netherlands India, Borneo and Burma, producing an aggregate of 75,000,000 bbl. annually, will have to be made up by other sources of supply. Even after the war, the United States, in all probability, will be called upon to furnish a substantial part of that former production—at least until it can be re-established. A small part of the loss being suffered by the purely oil business is also being made up in production of essential war materials by the industry. These include increased quantities of aviation gasoline, toluol, glycerine and butadiene, the essential ingredient in synthetic rubber. The industry, too, will be in a better position from the standpoint of equipment than most other industries. It has not over-extended, for priority reasons, its construction program and, hence, when the war terminates, will be in a sound position.

For the first quarter of this year profits of 26 companies reporting for that interim showed an improvement of 26 percent as compared with the corresponding period in 1941. The betterment reflected an increase in sales volume, especially in the first two months, and higher average prices

FIVE YEAR FINANCIAL REVIEW OF

	Net Income	Per Share of Com.	Net Working Capital	Net Capital Assets	Funded and/or Long Term Debt	No. of Pref. Shares	No. of Com. Shares	Surplus
Amerada Corp.								
1941	$2,569,560	$3.26	$3,473,258	$12,682,721	.....	.....	788,675	35,766,75
1940	1,775,734	2.25	3,124,396	12,016,406	.....	.....	788,675	4,774,54
1939	1,230,764	1.56	3,047,353	11,801,630	.....	.....	788,675	4,576,13
1938	1,634,486	2.07	3,680,800	11,591,429	.....	.....	788,675	4,922,74
1937	2,400,028	3.04	3,714,837	11,684,811	.....	.....	788,675	5,055,62
Atlantic Refining Co.								
1941	14,346,229	5.16	44,036,326	161,670,211	25,024,849	148,000	2,663,998	92,643,13
1940	6,217,453	2.11	45,152,518	145,997,524	25,124,849	148,000	2,663,999	80,629,95
1939	5,032,282	1.66	42,408,126	144,784,942	25,249,849	148,000	2,663,999	78,053,55
1938	4,310,913	1.40	40,723,724	142,172,139	25,406,849	148,000	2,663,999	73,270,96
1937	9,935,045	3.51	22,824,810	134,126,471	508,858	148,000	2,663,999	71,733,36
Barnsdall Oil Co.								
1941	(B) 5,026,202	2.25	2,928,159	12,897,743	3,140,000	.....	2,231,879	5,657,93
1940	2,193,471	.97	4,031,723	13,106,604	7,562,757	.....	2,251,017	1,926,08
1939	1,720,292	.76	4,534,676	11,671,041	7,575,979	.....	2,258,779	4,999,62
1938	2,837,894	1.26	2,884,341	11,416,400	5,000,000	.....	2,250,344	5,947,24
1937	1,903,029	.84	1,465,258	11,628,526	3,861,743	.....	2,250,344	6,396,68
Consolidated Oil Corp.								
1941	16,472,494	1.25	83,592,829	216,209,871	79,588,000	.....	13,128,953	181,492,42
1940	3,792,602	.28	91,144,403	194,838,625	69,030,627	.....	13,531,915	172,115,49
1939	7,540,880	.55	98,179,411	196,742,476	70,481,429	.....	13,751,726	183,590,95
1938	7,737,712	.55	97,874,488	201,583,988	72,179,196	.....	13,751,846	187,049,02
1937	20,809,295	1.44	78,130,681	209,354,872	48,564,969	54,491	13,915,617	190,874,64
Continental Oil Corp.								
1941	15,398,082	3.29	17,646,983	82,010,052	8,714,875	.....	4,682,565	81,564,11
1940	4,317,658	.92	30,010,809	73,082,217	21,906,177	.....	4,682,568	70,848,41
1939	6,304,504	1.35	38,844,133	63,132,258	21,071,600	.....	4,682,572	71,213,34
1938	5,139,755	1.10	45,753,061	55,862,435	21,071,600	.....	4,682,581	69,591,01
1937	13,948,460	2.98	30,395,524	50,970,433	.....	.....	4,662,388	69,133,64
Creole Petroleum Corp.								
1941	12,297,275	1.76	8,193,304	73,759,828	.....	.....	6,974,356	47,679,03
1940	6,834,170	.98	4,113,744	71,507,758	.....	.....	6,974,356	42,356,11
1939	9,590,366	1.37	7,463,866	68,869,647	.....	.....	6,974,356	42,496,30
1938	11,464,757	1.64	15,953,482	56,966,860	.....	.....	6,974,356	39,889,29
1937	11,218,752	1.61	17,073,570	52,162,879	.....	.....	6,974,356	35,638,82
Gulf Oil Corp.								
1941	33,568,624	3.70	80,951,044	372,056,770	46,155,801	.....	9,076,202	128,462,64
1940	22,150,277	2.44	125,388,013	357,743,026	48,590,062	.....	9,076,202	107,609,86
1939	15,315,781	1.69	97,534,014	351,936,147	51,112,595	.....	9,076,202	111,929,54
1938	13,017,076	1.43	126,830,235	350,468,996	75,613,092	.....	9,076,202	115,308,60
1937	31,854,065	3.51	118,361,299	339,864,527	79,913,155	.....	9,076,202	125,071,10
Humble Oil & Refining Co.								
1941	35,356,558	3.93	45,823,214	325,080,832	42,014,167	.....	8,987,940	154,036,87
1940	28,107,503	3.13	41,137,524	313,065,476	42,417,737	.....	8,987,940	138,406,21
1939	29,950,288	3.33	40,298,938	304,322,126	42,721,438	.....	8,987,840	132,409,92
1938	35,800,354	3.98	37,440,543	295,440,883	42,640,805	.....	8,987,840	120,663,58
1937	46,924,001	5.22	8,245,084	269,905,258	1,648,181	.....	8,987,840	103,172,10
Imperial Oil, Ltd.								
1941	16,144,069	.60	56,767,380	43,103,735	.....	.....	26,965,078	53,383,41
1940	17,635,717	.65	45,061,925	41,243,450	.....	.....	26,965,078	50,721,88
1939	19,250,071	.72	43,959,297	41,125,802	.....	.....	26,965,078	49,936,34
1938	25,950,580	.96	60,013,498	40,253,368	.....	.....	26,965,078	61,202,54
1937	26,442,157	.98	64,239,390	39,808,431	.....	.....	26,965,078	73,879,02
Mid-Continent Petroleum Corp.								
1941	4,866,036	2.62	25,110,651	36,035,163	.....	.....	1,857,912	44,893,31
1940	2,967,394	1.60	21,549,569	37,074,524	.....	.....	1,857,912	42,627,66
1939	2,650,502	1.42	20,139,581	37,668,405	.....	.....	1,857,912	41,994,54
1938	1,043,791	.56	18,614,252	38,158,682	.....	.....	1,857,912	41,309,13
1937	5,304,877	2.85	18,404,109	39,090,197	.....	.....	1,857,912	42,231,40
Ohio Oil Co.								
1941	10,799,736	1.42	24,895,921	89,838,837	15,500,000	212,233	6,563,377	24,405,35
1940	8,733,164	1.02	31,772,031	88,050,956	14,000,000	339,337	6,563,377	19,772,77
1939	1,492,086	(A) 4.29	30,468,732	90,583,528	18,000,000	354,537	6,563,377	15,596,45
1938	4,582,964	.25	28,340,324	96,328,461	.....	354,537	6,563,377	16,231,59
1937	11,862,107	1.31	28,777,772	96,387,559	.....	548,077	6,563,577	17,710,65
Phillips Petroleum Co.								
1941	17,346,977	3.92	30,001,026	180,708,712	33,923,259	.....	4,449,052	45,507,82
1940	11,590,317	2.61	29,130,002	173,186,916	32,589,696	.....	4,449,052	41,081,21
1939	9,833,314	2.21	24,305,805	174,933,218	33,598,518	.....	4,449,052	38,389,00
1938	9,049,122	2.03	43,662,204	160,683,926	41,417,920	.....	4,449,052	37,453,79
1937	24,113,874	5.42	30,657,681	158,719,012	25,613,235	.....	4,449,052	37,302,76
Pure Oil Co.								
1941	15,285,255	2.86	24,719,281	123,223,061	2,952,147	725,431	3,982,031	63,990,25
1940	8,718,057	1.21	22,700,307	115,237,430	3,478,686	725,431	3,982,031	54,604,29
1939	8,290,418	1.11	23,186,755	112,484,522	2,361,852	721,956	3,982,031	50,781,46
1938	5,412,903	.38	19,793,782	112,992,307	2,455,668	721,429	3,982,031	47,603,61
1937	11,403,805	2.15	26,285,254	106,907,568	2,665,760	725,431	3,738,143	46,952,96

UNITED STATES OIL COMPANIES

	Net Income	Per Share of Com.	Net Working Capital	Net Capital Assets	Funded and/or Long Term Debt	No. of Pref. Shares	No. of Com. Shares	Surplus
Seaboard Oil Co.								
1941	$1,257,367	$1.02	$2,118,383	$4,546,182	.....	.....	1,229,083	$3,146,415
1940	1,300,993	1.05	2,698,551	3,980,081	.....	.....	1,244,383	3,439,929
1939	1,746,464	1.40	2,306,744	3,988,415	.....	.....	1,244,383	3,496,862
1938	1,895,790	1.52	2,368,575	2,968,905	.....	.....	1,244,383	2,994,781
1937	2,447,130	1.97	2,374,122	6,273,767	.....	.....	1,244,383	2,343,374
Shell Union Oil Corp.								
1941	17,334,214	1.32	84,067,926	228,964,879	108,961,000	.....	13,070,625	36,648,283
1940	15,654,678	1.05	95,975,926	227,769,292	85,000,000	331,225	13,070,625	34,797,441
1939	11,805,713	.76	87,762,089	261,105,471	85,000,000	341,100	13,070,625	16,872,684
1938	11,318,423	.70	84,619,113	262,819,975	82,427,000	341,100	13,070,625	17,661,533
1937	20,668,880	1.44	54,800,185	269,950,889	61,021,430	341,100	13,070,625	17,350,251
Skelly Oil Co.								
1941	5,913,826	6.02	8,445,051	51,063,964	14,800,000	.....	981,348	30,758,394
1940	3,316,678	3.28	7,694,042	48,279,943	16,000,000	.....	981,348	26,316,591
1939	2,360,783	1.99	7,788,739	45,009,713	9,000,000	63,000	995,348	25,581,908
1938	2,650,055	2.27	7,588,908	45,455,396	9,026,681	64,500	995,348	24,588,248
1937	6,488,346	6.06	7,823,108	40,868,979	11,734,598	66,300	1,008,549	16,297,582
Socony-Vacuum Oil Co., Inc.								
1941	43,175,902	1.38	216,888,148	471,740,585	126,383,580	.....	31,708,452	155,449,853
1940	36,409,055	1.17	197,297,070	455,058,914	133,727,410	.....	31,708,452	178,320,612
1939	34,452,710	1.10	189,357,083	493,139,415	126,419,256	.....	31,708,452	232,514,577
1938	40,106,917	1.29	(R) 205,882,740	(R) 458,244,042	127,511,486	.....	31,707,991	213,664,902
1937	56,808,264	1.82	223,646,989	457,125,753	128,063,217	.....	31,708,452	189,654,276
Standard Oil Co. of California								
1941	29,909,421	2.30	103,755,136	455,881,836	40,000,000	.....	13,003,953	231,337,260
1940	22,487,586	1.73	88,553,262	445,593,600	25,000,000	.....	13,102,900	230,320,612
1939	17,882,505	1.36	88,095,224	446,839,002	25,000,000	.....	13,102,900	235,332,469
1938	28,875,653	2.20	64,489,533	449,350,905	.....	.....	13,102,900	236,967,035
1937	41,254,778	3.15	61,529,257	449,046,236	494,900	.....	13,102,900	229,298,177
Standard Oil Co. of Indiana								
1941	48,385,967	3.17	185,923,067	431,134,060	14,698,741	.....	15,284,935	319,452,179
1940	33,597,342	2.20	191,548,946	396,068,183	19,488,465	.....	15,271,982	294,114,662
1939	34,142,643	2.23	186,837,449	378,973,235	8,713,074	.....	15,272,014	277,716,485
1938	27,771,976	1.82	174,727,455	374,827,700	10,346,658	.....	15,272,020	280,850,326
1937	55,950,784	3.66	156,367,152	371,586,035	8,598,544	.....	15,267,030	284,891,637
Standard Oil Co. (N. J.)								
1941	140,572,419	5.15	506,275,556	1,040,832,931	194,512,825	.....	27,283,587	636,189,422
1940	123,886,346	4.54	485,854,976	1,078,223,509	187,553,785	.....	27,278,666	618,087,745
1939	89,128,756	3.26	466,607,198	1,121,061,376	190,638,179	.....	27,285,919	593,326,890
1938	76,053,170	2.86	489,684,138	1,172,251,955	192,850,838	.....	26,618,065	562,863,025
1937	147,993,147	5.64	434,929,054	1,193,534,803	139,268,806	.....	26,224,767	562,569,681
Standard Oil Co. of Ohio								
1941	6,249,443	7.47	17,566,209	51,799,637	9,446,676	120,000	752,265	31,088,988
1940	6,209,008	7.44	13,259,188	47,677,770	5,314,681	120,000	753,740	27,285,388
1939	5,602,499	6.64	15,403,625	43,965,974	6,702,971	120,000	753,740	23,180,268
1938	1,964,605	1.81	13,719,806	42,644,255	6,929,358	120,000	753,700	19,327,778
1937	3,362,960	3.66	10,625,869	39,874,172	.....	120,000	753,740	18,682,477
Sun Oil Co.								
1941	16,532,540	6.21	36,011,101	93,470,154	21,007,495	93,197	2,850,826	13,604,990
1940	7,969,068	3.03	22,552,302	93,278,795	18,066,869	100,000	2,434,840	15,958,344
1939	6,959,677	2.74	29,845,003	84,353,938	21,275,033	100,000	2,318,918	15,091,224
1938	3,685,119	1.07	31,085,619	79,192,720	21,386,250	100,000	2,315,960	11,182,964
1937	9,544,085	4.17	23,813,873	74,090,757	10,330,326	100,000	2,328,330	10,953,754
The Texas Corp.								
1941	51,874,681	4.77	148,797,057	366,505,822	111,801,380	.....	10,875,800	222,837,338
1940	31,547,662	2.90	124,231,625	365,656,993	111,834,697	.....	10,875,994	197,634,702
1939	32,886,807	3.02	136,423,045	354,847,254	102,521,409	.....	10,876,139	200,036,059
1938	23,139,030	2.13	113,780,180	339,074,007	62,869,727	.....	10,876,882	188,912,882
1937	54,574,319	5.02	127,058,606	329,648,904	65,667,412	.....	10,875,006	187,358,901
Tide Water Associated Oil Co.								
1941	15,564,093	2.09	42,482,362	137,952,146	36,936,400	500,000	6,374,033	37,342,776
1940	9,519,083	1.14	39,973,976	132,143,846	38,200,000	500,000	6,372,676	33,148,237
1939	8,958,971	1.05	40,018,720	126,832,660	36,848,615	500,000	6,368,667	33,094,647
1938	10,427,273	1.28	40,361,831	126,130,786	38,386,548	500,000	6,373,253	30,462,068
1937	15,801,383	2.09	42,019,706	123,923,854	39,168,798	500,000	6,369,175	28,285,935
Union Oil Co. of California								
1941	6,239,232	1.34	36,622,981	130,271,906	37,480,000	.....	4,666,270	23,840,595
1940	4,606,790	.99	44,936,309	120,260,932	37,958,500	.....	4,666,270	22,283,270
1939	5,846,241	1.25	48,600,877	116,536,861	38,018,500	.....	4,666,270	22,350,171
1938	6,862,758	1.47	39,408,084	115,792,578	18,018,500	.....	4,666,270	22,953,078
1937	12,061,332	2.58	41,888,136	112,174,792	18,026,500	.....	4,666,270	21,691,244

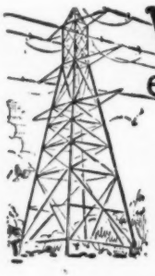
(A) On preferred stock.
(B) Including a non recurring profit of $2,515,996 from the sale of West Texas lands.
(R) Revised because of European War and non-availability of certain figures.

for both crude oil and products. It was not until March that excessive transportation costs began to affect the profits of eastern companies. In the accompanying tabulation is given the net profits and per share earnings of the 26 companies and a comparison with the similar period in 1941. One small producing company had a deficit in this year's first quarter.

In the aggregate, the 26 companies (one had a deficit) had net profits of $42,528,127 against $33,568,368 in the corresponding period of 1941. As indicated, the profit showings this year, in several cases, gave reflection to certain charges to income in that period for the purpose of establishing specific reserves. In many instances, furthermore, provisions for federal taxes were established at higher than present rates in anticipation of Congressional proposals to lift the corporate tax. For the current quarter to end June 30, it appears reasonably certain that profits will not be as large as in the initial period, for several reasons. These include severe restrictions on the production of crude oil; a declining demand for gasoline, partly due to rationing on the Eastern Seaboard; higher costs of operation and the slim prospect of obtaining authorizations from the government to advance prices.

Profits of the American oil industry, as reflected by reports of 23 leading companies whose shares are listed on important exchanges, were at the highest level since 1937. Were it not for liberal charges to income for the purpose of establishing additional reserves, last year's net profits would have topped the record of 1937. Net income of the 23 companies aggregated $554,044,858 which, after allowance for the payment of preferred dividends by a few companies which have such stock outstanding, was equal to $2.92 a share on the combined outstanding common shares. It was a gain of 40 percent over the $397,067,919 netted in 1940, equal to $2.06 a common share. The peak was $607,423,900 earned in 1937, equal to $3.20 a common share. The showing in 1941 was due to a record volume of sales at slightly higher average prices, and was realized in face of more onerous federal taxation. Nine companies, at least, made charges against last year's income for the purpose either of establishing specific reserves, or to increase their reserves for contingencies and taxes. The aggregate of these, for the nine companies was $52,000,000 and with an additional charge caused by a dif-

"Prospects are not good for 1942" said Walter C. Teagle (left) and W. S. Farish in presenting the annual report.



Wherever there is electrical equipment —

The **46-RANGE UNIVERSAL**

AvoMeter

Electrical Measuring Instrument *Model 7*

46 RANGES ONE INSTRUMENT

Current, A.C. and D.C. (0 to 10 amps.)
Voltage, A.C. and D.C. (0 to 1,000 volts.)
Resistance (up to 40 megohms.)
Capacity (0 to 20 mfds.)
Audio-frequency Power Output (0 to 4 watts.)
Decibels (—10 Db. to +15 Db.)

Because of its outstanding versatility, accuracy and simplicity the Model 7 Universal AvoMeter is the most widely used of all test meters. A compact multi-range A.C./D.C. instrument, it provides for 46 ranges of direct readings covering every essential electrical test. No external shunts or multipliers. All measurements made from two terminal points only—selection of any range by means of two simple switches. B.S. 1st Grade accuracy. Automatic cut-out protects meter against severe overload. Robustly built for lasting, reliable service.

BRITISH MADE

In spite of greatly increased production, most of our output of "AVO" Instruments is being taken by the Services. Delay in delivery of Trade Orders is consequently inevitable, but we shall continue to do our best to fulfil your requirements as promptly as possible.

● *Write for fully descriptive literature and current prices.*

Sole Proprietors and Manufacturers:—
THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.
Winder House, Douglas Street, London, S.W.1, England. *Telephone: Victoria 3404-7*

Achievement

11-ENGINE FEN SCHEME COMPLETED

The illustration shows the largest of four Pumping Stations (4 engines totalling 1,440 B.H.P.) now in service for the North Level Commissioners.
The scheme has a total power output of 2,510 B.H P., and is another instance of the adoption of Crossley-Premier horizontals for pumping duty. Continuous operation over long periods has been a feature of these engines for many years, due chiefly to simplicity and strength of the mechanical details.

CROSSLEY-PREMIER

POWERS UP TO 3,000 B.H.P **DIESEL ENGINES**

CROSSLEY-PREMIER ENGINES LTD., SANDIACRE, Near NOTTINGHAM

36-F

ferent method of valuing inventories by Standard Oil (N. J.), as well as other adjustments, amounting to $19,200,000, the total reached to about $71,000,000.

Standard Oil Co. (N. J.) last year charged $30,000,000 to 1941 consolidated income account to be added to contingent reserve for foreign investments which now stands at $105,000,000. The increase was made to cover additional losses which have probably been sustained. It is aside from the $19,200,000 mentioned in the preceding paragraph. The Texas Co. deducted $7,000,000 from earnings for additional reserves for possible loss on its investment in non-subsidiary companies operating in foreign countries; Shell Union $4,000,000 for amortization or general revaluation of properties; Standard of California charged

W. F. Humphrey of Tide Water does not anticipate profitable operation for East Coast companies.

$3,045,912 for write-downs of investments in certain subsidiary and associated subsidiary companies operating in foreign countries; Consolidated Oil charged $2,500,000 to be added to contingency reserves; Gulf Oil $2,000,000 for contingency reserves; Atlantic Refining $1,919,947 for contingencies and possible war losses; Tide Water $2,000,000 for post-war adjustments, and also transferred $2,500,000 from earned surplus for reserves against possible reduction in book values after the war; and Socony-Vacuum Oil Co., Inc. transferred from earned surplus $50,000,000 as a contingency reserve ($75,000,000 was transferred in 1940).

Coincident with an improvement in profits in 1941, cash dividend payments on equity shares were increased, although not in proportion to the percentage gain in profits. Payments by the 23 companies last year amounted to $248,674,000, an increase of 17 percent over the $210,999,730 distributed in the previous year. Thirteen companies paid more than in 1940, nine paid the same rate and one paid less. Sun Oil Co., in addition to the cash payment of $1 a share on common, also distributed stock dividends last year aggregating 16 percent. In 1940 the stock dividend amounted to only five percent. Because of the less favorable profit outlook for the current year,

. . . AND IN SHALLOW WELLS, TOO!
Whatever the Depth
AQUAGEL WILL AID DRILLING BY HELPING THE MUD TO ACCOMPLISH THE FOLLOWING:
1. Seal off minor water flows. Keep surface waters under control.
2. Consolidate loose formations. Check sloughing of unconsolidated material into open hole.
3. Lubricate all moving parts and reduce corrosion. Make all metal parts last longer.
4. Deposit a thin, relatively impermeable filter cake which is easily removed from the face of productive zones.
5. Help to obtain maximum production. Low water loss preserves original permeability of producing zones.
6. Reduce transportation and storage problems to a minimum. A little AQUAGEL goes a long way. Unused sacks of AQUAGEL are easily transported to another location.
AQUAGEL-water muds are heavy enough for many drilling conditions (particularly in low pressure zones) and are among the most economical that can be prepared. One ton of AQUAGEL will yield as high as from 100 to 120 barrels of excellent mud.
Always use Baroid products. It pays!

AQUAGEL Muds Make Drilling Safer, Faster and more Economical

Most of the deepest wells have been drilled with the aid of AQUAGEL. The same qualities which have made this material advantageous in reaching great depths are equally as desirable in the three or four-thousand-foot well.

Today, shallow wells have risen in importance because of the type of oil produced, the need for greater production, and the shortage of steel. AQUAGEL muds enable operators in both deep and shallow zones to cope with the demand for speedy production and economy of strategic materials by eliminating drilling difficulties and reducing the need for casing.

BAROID SALES DIVISION
NATIONAL LEAD COMPANY
BAROID SALES OFFICES: HOUSTON • LOS ANGELES • TULSA

PATENT LICENSES, unrestricted as to sources of supply of materials but on royalty bases, will be granted to responsible oil companies and operators to practice the inventions of any and/or all of United States Patents Nos. 1,575,944; 1,575,945; 1,807,082; 1,991,637 and further improvements thereof. Applications for such licenses should be made to Los Angeles office.

BAROID PRODUCTS: BAROID AND COLOX, AQUAGEL, FIBROTEX, BAROCO, STABILITE, AQUAGEL-CEMENT, SMENTOX, ZEOGEL, IMPERMEX, MICATEX, TESTING EQUIPMENT, BAROID WELL LOGGING SERVICE

SULPHURIC ACID
CHEMICO CHEMICAL CONSTRUCTION CORP.
Production
Recovery
Concentration

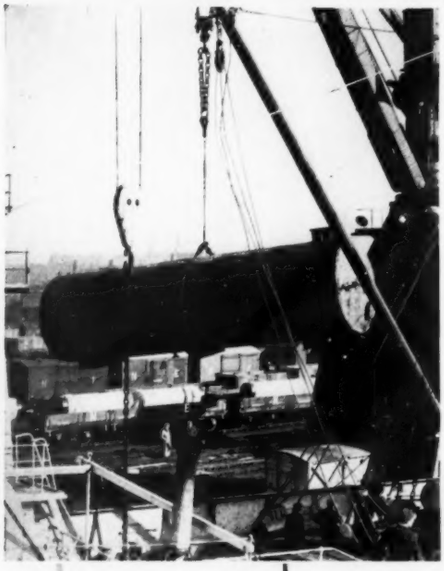
Whether your acid requirements involve large or small quantities, consult the Chemico engineers for authoritative advice and recommendations. Chemico service includes design of plant, furnishing of equipment, training of crew, and guarantee of performance, based on 27 years of specializing on acid production and recovery.

Chemical Construction Corporation
30 Rockefeller Plaza, New York, N. Y.
Cables:—Chemiconst, New York
European Representatives, Cyanamid Products, Ltd., Berkhamsted, Herts., England

CHEMICO PLANTS are PROFITABLE INVESTMENTS

STORAGE TANKS
any capacity
for OIL, PETROL, ETC.
ARC WELDED
We are experts in the designing, manufacture and erection of Welded Tanks.
COMPLETE INSTALLATIONS
Send us your Enquiries
Oxley Engineering Co., Ltd.
HUNSLET LEEDS, 10 ENGLAND
Telephone LEEDS 27468/9 Telegrams: OXBROS LEEDS
LONDON OFFICE: Winchester House, Old Broad Street, E. C. 2
Telephone: LONDON WALL 3731

MODERN INDUSTRIAL PLANT



IN
STEEL
CAST IRON
AND
COPPER
SUPPLIED
AND
ERECTED
THROUGHOUT
THE
WORLD
FOR ALL PURPOSES

Shipment of a consignment of over 600 tons from our works.

ASHMORE, BENSON, PEASE & CO. Ltd.
STOCKTON-ON-TEES ENGLAND

OIL DISTRIBUTION

The Great Western Railway Company's South Wales Docks at CARDIFF, SWANSEA, NEWPORT, BARRY, PORT TALBOT and PENARTH (Harbour) are excellent terminals for oil distribution.

OIL TANKERS AT SWANSEA DOCKS

SWANSEA DOCKS is one of the greatest oil ports in Great Britain.
Important oil depots have also been established at CARDIFF and at PENARTH (Harbour).

SITES FOR NEW DEPOTS ARE AVAILABLE

For information apply to the respective Dock Managers or to:—

W. J. THOMAS,
Chief Docks Manager,
Great Western Railway,
CARDIFF

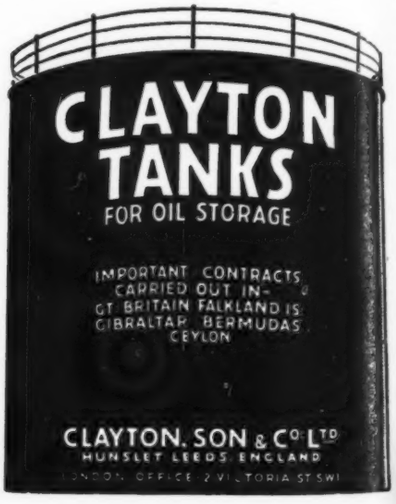
JAMES MILNE, ***General Manager,***
Paddington Stn., London, W.2.

it appears reasonably certain that dividend payments will be lower than in 1941.

Funded, or long term, debt of the industry continued to expand in 1941 from the low of recent years and two companies, thus far in 1942, have arranged refundings and an increase in this obligation. As of December 31, last, the long term debt of 20 companies (three have no such obligations), increased to $973,041,105 compared with $942,844,997 a year previously, and $628,150,432 (for only 16 companies) at the close of 1937. Part of the increase in 1941 was due to borrowing for the purpose of retiring high-rate preferred stock, such as that of Shell Union Oil Corp. and Ohio Oil Co., mentioned in the January issue of WORLD PETROLEUM.

In May, of this year, Humble Oil & Refining Co. sold an issue of $50,000,000 of serial debentures, bearing 2.5 to 2.95 percent interest, to a small group of life insurance companies. The proceeds were used to pay off $40,000,000 of short term indtebtedness and to provide $10,000,000 of additional working capital. Standard Oil Co. (Ohio) in May also arranged for the sale of $20,000,000 of long term indebtedness ($15,000,000 in debentures and $5,000,000 in bank loans) to be used to redeem $8,000,000 of current long term debt; provided approximately $7,000,000 for construction of new refining facilities and the remainder to be added to working capital. Ohio Oil Co., meanwhile, has called an additional 30 percent of its outstanding six per cent preferred stock. Two retirements of portions of this issue were made in previous years. As of December 31, last, there were 212,233 shares outstanding, and the current redemption will reduce these by 63,669 shares.

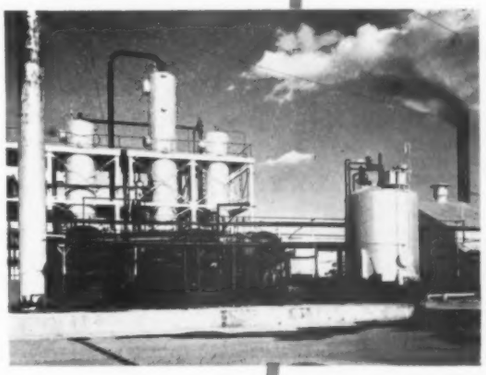
Working capital of the 23 companies, reflecting the improvement in operating results in 1941, expanded by $13,000,000 at the year-end to $1,772,131,569, the highest in several years. Large companies with East Coast interests, however, are probably dipping into these funds in connection with losses they are suffering on account of excessive transportation costs.



The advantages of

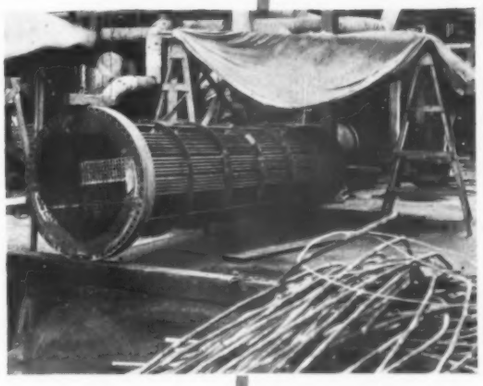
OPTIMUM REFINERY OPERATION

are vital to production for war



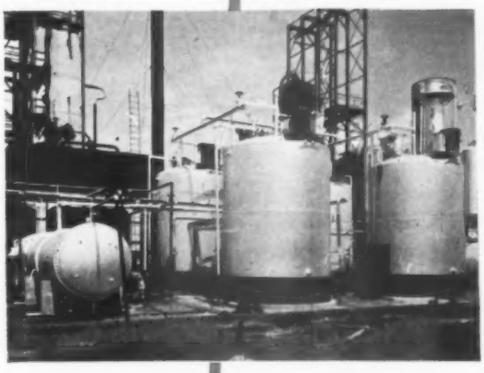
And for refiners charging salty crudes, Petreco Electric Desalting assures optimum operation . . . steps-up unit capacities, lengthens on-stream time, increases yield, and permits higher operating temperatures.

Without effective salt removal, refinery equipment is certain to suffer from salt ravages . . . Plugging, coking and corrosion take their toll, and lost on-stream time, equipment failures, and excessive maintenance costs climax the damages.



Some refiners have found they can delay salt troubles by curtailing throughput, lowering temperatures and tolerating reduced efficiency. They accept poor operation as the necessary price to be paid for staying on stream.

But this is no time to pamper equipment just to "keep it going"! Especially when the demand for higher octane gasoline is requiring higher refining temperatures and pampering only *delays* salt troubles.



Petreco salt removal is providing optimum refinery operation in many American refineries today. These operations provide our engineers with facts and case histories that should prove interesting to any refinery operator. Petreco engineers are at your service . . . at your convenience . . . at no cost or obligation for preliminary tests and discussions.

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA
GENERAL OFFICES: LOS ANGELES, CALIFORNIA
GULF COAST DIVISION: HOUSTON, TEXAS
EASTERN DIVISION: TOLEDO, OHIO

Representatives in Principal Oil Fields and Refining Centers

PETRECO
DESALTING DEHYDRATING

Congratulations to PHILLIPS Petroleum Company *25th Anniversary*

FOREIGN OIL LEGION

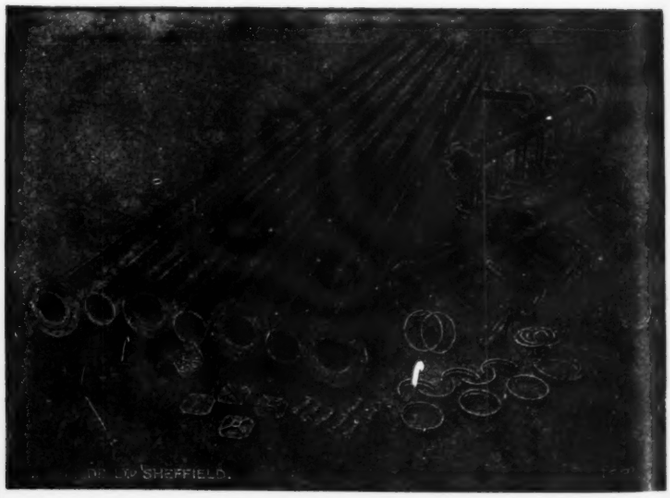
Thorkild Rieber, formerly chairman of The Texas Company became president of Barber Asphalt Company on May 13. Mr. Rieber, was elected a director of the company last September, succeeding Frank Seamans who retired.

LIEUTENANT-COLONEL J. W. FLANAGAN, president of the Andian National Corporation, completed a 22,000 mile journey through South America early in May. The trip, which was undertaken unofficially at the request of friends in Washington, began in December 1941 and took Col. Flanagan to every important city in South America. His many years of experience in Latin America and his intimate acquaintance with political and commercial leaders south of the Rio Grande made it possible for Col. Flanagan to form accurate estimates of the trend of public opinion in those countries. On completion of his extended trip Col. Flanagan spent a few days at his home in Toronto and then journeyed to Washington during the latter part of May to report on his findings.

THE NEW YORK CHAPTER of Nomads held the first of what promises to be an annual series of open house entertainments to which members of the petroleum industry who have served in foreign fields or are interested in this division of the industry were invited as guests of the chapter. The principal speaker of the evening was J. C. Rovensky whose long service to the cause of improved Pan-American relations qualified him eminently to speak on this subject. In the course of his speech Mr. Rovensky pointed out that men in the oil industry, through their activities and friendships in the Americas and because of their realistic approach to economic, commercial and political problems are being of great service in promoting good will in Latin America. He called attention to the great opportunities that will confront the oil industry during the period of reconstruction that is bound to follow the present conflict; oil will play a vital part in the promotion of transportation, communication and other economic developments throughout the western hemisphere. Members of all the most important international oil companies were present: of particular interest were Konstantin I. Lukashev, deputy chairman of the Soviet Government Purchasing Commission, E. S. Sergeev and M. M. Gousev of Amtorg. The Argentine Government was represented by C. T. Campodonico, J. Reca, P. J. Panza, and J. N. Catinari. Other distinguished guests were H. L. Wilkinson and James Park of the British Petroleum Mission and N. E. Baker and E. M. Butterworth of the Petroleum Coordinator's Office in Washington.

DR. FELIX MENDOZA NATES, in a recent statement published in "Colombian Oil News Digest" announced the final organization of the Instituto Colombiano de Petroleos which includes in its membership many of the most prominent members of the Colombian petroleum industry. Dr. Mendoza stated that the aims of the In-

HIGH QUALITY
STEELS
FOR THE OIL INDUSTRY.
TRADE ERA MARK
H.R.
HEAT-RESISTING STEELS
HAVE NUMEROUS APPLICATIONS.
For parts of plant requiring rigidity and low scaling loss at high temperatures they are unequalled.
TRADE ERA MARK
C.R.
NON-CORRODING STEELS
FOR THERMOWELLS, REACTION VESSELS, PUMP PARTS, BUBBLE CAPS.
Highly resistant to the attack of numerous chemical agents.



REFORMER OVEN TUBES AND FITTINGS OF HADFIELDS "ERA H.R." HEAT-RESISTING STEEL. FABRICATED FROM ROLLED PLATES AND WELDED TOGETHER. LENGTH OF TUBES 24 FEET 1¾ INCHES. INSIDE DIAMETER 6 INCHES.

HADFIELDS LTD.
EAST HECLA WORKS • SHEFFIELD • ENGLAND.
No. 2517

stituto Colombiano were to cooperate with the government in its relations with the oil industry, to coordinate and encourage the study of oil in Colombia, to advise public or private organizations on matters pertaining to oil and to encourage the exchange of technical information. The Minister of Mines and Petroleum will be honorary president of the Institute, headquarters of which will be located in Bogota.

ROBERT WEBB COGHILL, formerly with the Cooper Petroleum Company in Texas has joined the staff of the Board of Economic Warfare as senior petroleum analyst with offices in the Commerce Building, Washington, D. C.

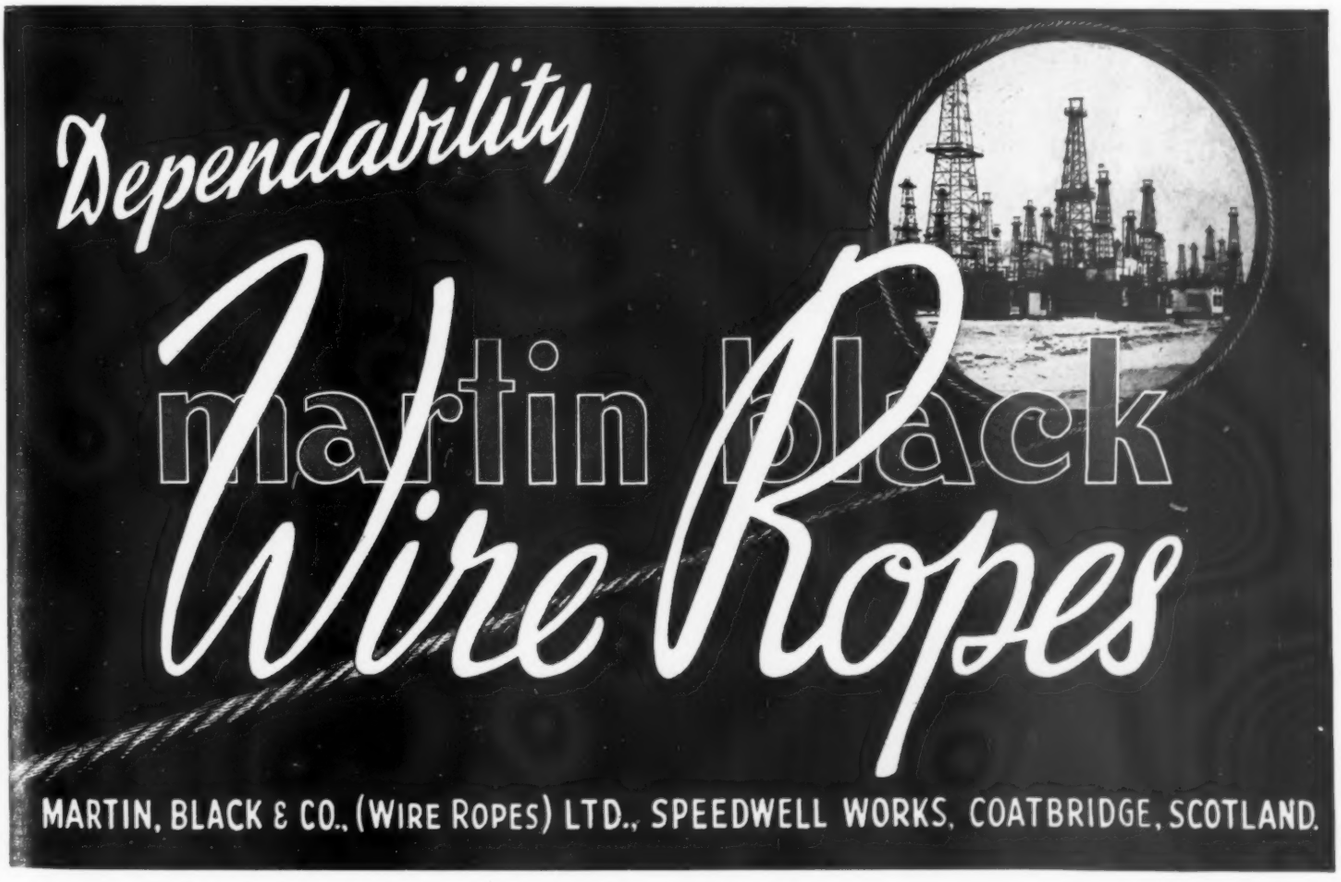
JAMES J. QUOYESER, formerly with the Sinclair interests and for twenty years past connected with producing activities in Mexico, is in charge of the recently reopened Caracas office of Atlantic Refining Company, located in Edificio Behrens.

WALTER C. PEW, general sales manager for the Sun Oil Company, who is now on leave of absence from the company to serve with the Ordnance Department of the U. S. Army has been commissioned a major. Major Pew, whose business office was at Sun's home office in Philadelphia, has been with the oil company for twenty years, and was also serving as a member of the company's board of directors. He became Sun Oil general sales manager in 1941, and in addition was company Coordinator. Major Pew is known for his organizing and leadership ability, and his education and industrial background have given him wide engineering and technical knowledge. A Massachusetts Institute of Technology man, his oil experience has been diversified, and includes a number of positions in various departments, starting with that of an oil scout in the Mexia and Uvalde areas of Texas. For Sun Oil, M. H. Leister has been appointed Acting General Sales Manager, and J. B. Plumb has been named Acting Coordinator.

S. J. VOS, who has been associated with Trinidad Leaseholds, Ltd., as general sales manager in control of its United Kingdom marketing organization since 1930, has been appointed a director of the company.

FRED C. RIPLEY, JR. has obtained a leave of absence from his present duties as manager of export sales for Emsco Derrick & Equipment Company in order to offer his service to the government during the war effort. Mr. Ripley is well acquainted with foreign oil producing countries having made a number of trips to South America and elsewhere in connection with his work for Emsco. While the company is actively engaged in war production, Mr. Ripley was anxious to become more closely and actively affiliated with the actual war effort.

Fred C. Ripley Jr.



WORLD PETROLEUM ABSTRACTS

Summaries of the Most Important Articles as Published in the Oil Press of the World Dealing with Technical and Economic Aspects of the Petroleum Industry — Edited by Dr. O. W. Willcox.

GEOLOGY

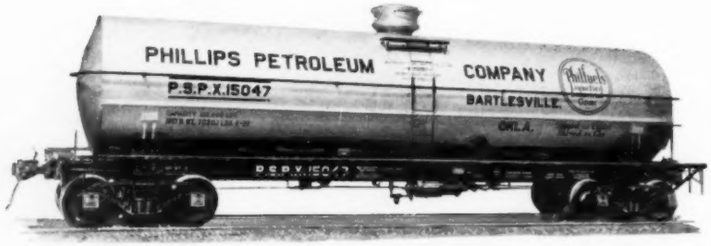
Stratigraphic Studies in California—E. R. Atwill, in BULLETIN AMERICAN ASSOCIATION PETROLEUM GEOLOGISTS, Vol. 26 (1942), No. 2, pp. 153-161.

Before 1939 California geologists thought almost exclusively in terms of the reflection seismograph as an exploratory approach to finding oil fields. By this means they found an abundance of structural details beneath flat alluvium valleys, and new fields were discovered in quick succession. Eventually, the seismographic crews began to run out of suitable fields for their operations; the ability of the seismograph to find new oil structures in this region began to weaken and the need of a new approach was sought.

It is now realized more than half of California's oil fields are dependent on some form of stratigraphic control. The center of interest for the California geologists is now stratigraphic accumulation and how it may be recognized, and all related criteria are being subjected to new scrutiny, with chief emphasis on vertical and lateral variations in lithology, discovery of the source and transport direction of sand bodies, and the tracing of a shoreline condition into an area where structure will combine with it favorably to suggest a trap. Well cores are more intensively correlated and electrical logs are studied to show variations in sands from one locality to another. Smaller lithologic areas are being mapped; more individual marker beds are traced; local as well as regional gradations in texture are being plotted. Down-dip thickening, predepositional faulting, and all other possible indications are acquiring new importance.

In this scrutiny of the results of old geological processes much inspiration is being obtained from a study of the same processes now going on at the surface at the present time. An intimate knowledge of the processes of silting, sand-bar formation, etc., now going on is valuable for the interpretation of buried stratigraphy.

General American Congratulates A Great American Institution!



Many of the high-pressure-resisting propane tanks which distribute Philgas and Philfuels throughout America were made at Sharon. It is natural, then, that the Plate and Welding Division of General American should take pleasure in congratulating the Phillips Petroleum Company on its 25th Anniversary. Our best wishes to this great company, which is so ably aiding the one great cause: VICTORY.

PLATE AND WELDING DIVISION

GENERAL AMERICAN TRANSPORTATION CORPORATION

GATX GENERAL AMERICAN

Cable Address
GENTANWELD
Sharon, Pa.

PLATE & WELDING DIVISION
PLANT AT SHARON, PA.

Offices In All Principal Cities

DRILLING

Decoking Petroleum Residues—Judson S. Swearingen, Morris R. Morrow and Bruce Jones, in REFINER, Vol. 21 (1942), No. 2, pp. 59-63.

The petroleum refiner is acquainted with various processes of "running to coke" and with various methods of removing the coke from the reaction chamber. The authors now add a new concept and procedure to this art.

Their idea started from some laboratory experiments in which they determined the time necessary to distill over the whole charge in the experimental still at different constant temperatures. This time could be varied from several hours down to 6 or 8 minutes or less, depending on the temperature chosen. When the percentage yields of coke, distillate, gas, and gravity of distillate were plotted against coking time in minutes it was seen that with a short reaction time, ranging from 0.5 minutes to 10 minutes, there is a favorable zone of operation wherein the gas yield is near a minimum, the overhead liquid yield near a maximum, the coke yield near or at a minimum, and the gravity of the liquid product almost as high as at any reaction time.

This suggested carrying out the coking reaction in thin films, for which a suitable apparatus was constructed. This apparatus consisted of a 16-inch dome-shaped pot with a removable bottom. The dome was enclosed in brick work, leaving an annular space for the circulation of burning gas by which the shell of the dome is heated externally. In operation the hot residuum from the crude stills is run in through the top of the dome and spreads out on its floor, where it is reduced to coke by radiant heat. A base layer of coke or soil prevents the coke from sticking, so that when a run is completed it may easily be removed by dropping the removable bottom of the dome. From the ex-

7 sound reasons why *You* should use

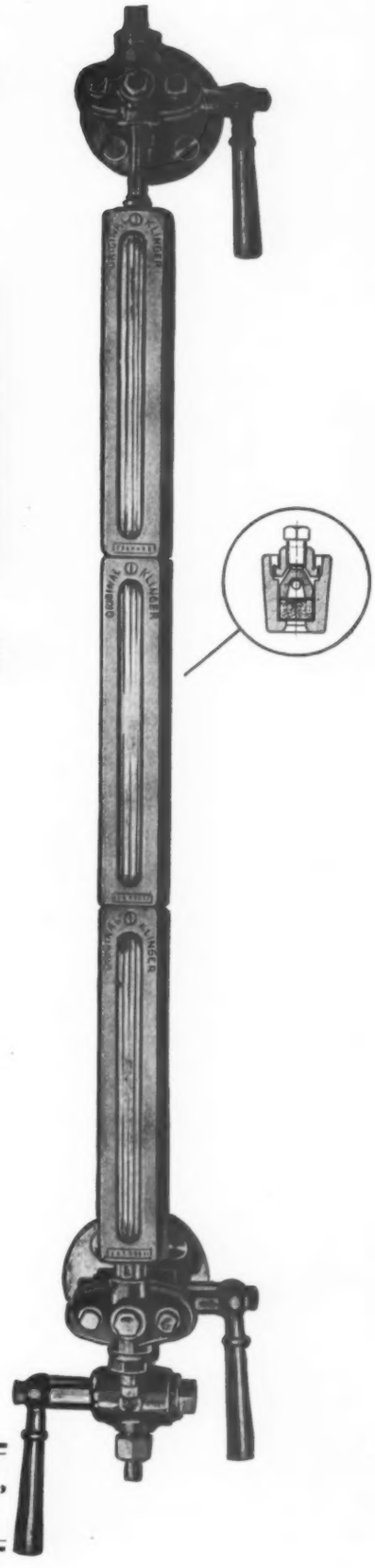
"Klinger

LEVEL INDICATORS

The Reflex Level Indicator illustrated is of forged construction throughout, with stainless steel trim.

Among its special features are:

* Rigid box-shaped Forged Steel Gauge Body.
* Reflex Gauge fitted with one row of tightening bolts only.
* Separate Glasses easily removable.
* Automatic safety shut-off balls at top and bottom.
* Easily detachable stuffing-box heads for removing gauge as complete unit.
* Gauge can be turned to face any direction.
* Klinger patent "SLEEVE-PACKED" shut-off and drain cocks.



Specialists in all types of LEVEL GAUGES, including Double Plate (Thru'-Vision) Type, Steam Heated Gauges and the Hubbard Patent Gauge for LIQUEFIED GASES (Butane, Propane. etc.).

Write for Catalogue and full particulars

RICHARD KLINGER LTD., "KLINGERIT" WORKS, SIDCUP, KENT, ENGLAND

Foots Cray 3022

STOP LOADING RACK LOSSES!

STYLE 30X4 Counterbalance Joint

EQUIP your Loading Racks with CHIKSAN Ball-Bearing Swing Joints NOW and stop losses due to leaks or high maintenance costs. Lengthen the life of your fabric hose by using CHIKSAN Joints as flexible connections.

STYLE 30X5 Counterbalance Joint

NOTHING TO TIGHTEN OR ADJUST—No packing glands to keep tight. No constant maintenance attention required.

STYLE 50X5 Counterbalance Joint

EASY OPERATION—No sticking or binding in any climate. Full 360° rotation in 1, 2 or 3 planes, on double rows of steel balls.

STYLE 50X1 Counterbalance Joint

FOR PRESSURE OR SUCTION—CHIKSAN Swing Joints are equally effective on both loading and unloading lines or for underwater installations.

STYLE 20 Flanged End Joint

OPTIONAL END CONNECTIONS — Supplied with threaded or flanged ends or bored for welding. Made of malleable iron or steel. Sizes from 2" to 6".

STYLE 60 Flanged End Joint

IMPERVIOUS TO MATERIALS INJURIOUS TO RUBBER — Special packing sets for handling fluids and gases which cannot be handled with ordinary fabric hose.

FOR EVERY APPLICATION—CHIKSAN Swing Joints are used on Loading Racks for trucks and tank cars, barge hose and dock risers — wherever flexible lines are required.

WRITE FOR LATEST CHIKSAN CATALOG

EXPORT OFFICE: 50 Church St., New York, N. Y.

CHIKSAN TOOL COMPANY

CHIKSAN TRADE MARK REG.

BALL BEARING SWING JOINTS for ALL PURPOSES

BREA, CALIFORNIA

ALL-STEEL ROTARY HOSE CIRCULATING HEADS · MUD GUNS

periments made thus far it is concluded that commercial units would be feasible, especially for small plants processing a few hundred barrels of residuum per day.

ASPHALT & TAR

Surface Consistency Characteristics of Asphalts—E. C. Knowles and F. C. McCoy, before AMERICAN CHEMICAL SOCIETY, PETROLEUM DIVISION, Memphis Meeting, April, 1942.

The need for studying the surface consistency characteristics of asphalts, as well as the bulk flow properties, is pointed out. A modification of the A.S.T.M. asphalt penetration method which has been used to investigate consistency characteristics of asphalt surfaces ranging in thickness from 0.04 to 0.30 cm. is described.

The modified procedure is based upon the load in grams required to force the A.S.T.M. needle into the asphalt to a given depth in a constant time. This procedure avoids several shortcomings of the A.S.T.M. penetration procedure and has been identified as constant depth penetration.

Data are given to illustrate the application of constant depth penetration measurements to show the progressive increase of hardness of roofing asphalt in the accelerated weathering test. Data are also given to illustrate application of the method to the measurement of the effect of various storage conditions on surface consistency of asphalt, and from this work a storage test was set up at 125° F. whereby the tendency of asphalts from various sources to undergo surface hardening was determined.

The conclusion is reached that certain properties of asphalt surfaces can be studied by application of constant depth penetration measurements, and that the results supplement information currently obtained by bulk flow consistency measurements.

CHEMISTRY

Determination of Phosphorus in Lubricating Oil—Harry Levin, F. F. Farrell, and A. J. Millendorf, before PETROLEUM DIVISION, AMERICAN CHEMICAL SOCIETY, Atlantic City, September, 1941.

A simple, accurate method for determining organically combined phosphorus in lubricating oil is described. It involves ignition of the sample with sodium naphthenate which serves to bind the phosphorus in inorganic water-soluble form. The water solution of the phosphate is reacted to form ammonium phosphomolybdate, which is centrifuged and the phosphorus calculated from the volume of precipitate.

Determination of Free Sulfur in Lubricating Oil—Harry Levin and Ervin Stehr, before PETROLEUM DIVISION, AMERICAN CHEMICAL SOCIETY, Atlantic City, September, 1941.

A method is described for determining free sulfur in lubricating oil, which involves dissolving the sample in benzene and acetone, refluxing with copper to fix the sulfur as sulfide, and determining its available hydrogen sulfide iodometrically. Special precautions and apparatus were found necessary to avoid loss of hydrogen sulfide and these are described.

"The nation now, as in 1917, will need the wholesome tonic of recreational travel as one of the greatest maintaining forces of national morale."—Statement by United States Travel Bureau of the U. S. Department of the Interior.

WE'RE DOING *Our Part*

HOTELS OF SOUTHERN CALIFORNIA are doing their part in this great national cause by maintaining normal facilities and operations in every department for the use of Americans seeking mental and physical release from strain and fag.

To facilitate the business of Americans, and in the interest of war production, there is augmented service at the great metropolitan hotels of Los Angeles, Hollywood, Long Beach, San Diego and the other large cities of Southern California.

There are no rations of fun at the fine resort hotels located on the desert at Palm Springs; by the sea at Coronado, Carlsbad, Laguna, LaJolla, Santa Catalina, Santa Monica and Santa Barbara; and amid the beauties of Pasadena, Beverly Hills and Riverside. Health and energy still bubble from the earth at the famous mineral springs resorts.

Golf, tennis, riding, swimming, cycling, badminton and a multitude of other sports and recreations are still to be enjoyed every day of the year by the visitor to this sun-blessed land.

Hotel rates in Southern California will continue at pre-war levels. Nowhere is there a greater variety of hotel accommodations to suit every budget and every taste.

In spite of rumors, travel is normal in Southern California. Transportation to and throughout the state is normal, and hotel and resort life is normal.

For further particulars, consult the nearest travel or transportation agent or your automobile club.

Hotels

OF SOUTHERN CALIFORNIA

Room 701, 629 South Hill Street,
Los Angeles, California.

RENOLD

MARK 3

OIL WELL CHAIN

Designed and made to A. P. I. specification by the world's leading driving chain makers.

Send for leaflet No. 216/32

THE RENOLD & COVENTRY CHAIN CO., Ltd.
MANCHESTER, ENGLAND
Agents throughout the world